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## Implementing an Evidence-Based Education Program for Labor and Delivery Nurses in a Community Hospital Setting

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Implementing an Evidence-Based Education Program for Labor and Delivery Nurses in a  
Community Hospital Setting

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### Abstract

Many factors contribute to the success of an organization. The nursing workforce is the guiding strength behind the delivery of safe patient care resulting in quality outcomes. Preparing the nursing staff to deliver safe care begins with the introduction of evidence based practice as a viable partner to clinical expertise and knowledge. Implementing an evidence based education program is a critical step in the process of integrating evidence into clinical practice. This paper focuses on the implementation of an evidence based education program for Labor and Delivery nurses in a community hospital setting. Evidence based education can promote competency development, professional growth, and improve patient outcomes. Women seeking obstetrics care, and their infants, will benefit from evidence based, nursing education, aimed at the management of preeclampsia and the patient receiving Magnesium Sulfate, assessment of newborn transitional vital signs, maternal hemorrhage, shoulder dystocia, and the management of acute bedside emergencies.

### **Background and Significance**

The purpose of the capstone project was to implement and sustain an evidence based education program for Labor and Delivery nurses in a community hospital setting. In the age of healthcare reform, organizations should remain committed to improving patient outcomes. The climate of healthcare is uncertain, and there are multiple changes and challenges facing healthcare executives. As hospitals move toward a patient centered culture where the promotion of patient safety and improved clinical outcomes become priority, a culture of safety takes shape. A culture of safety begins when leaders who have common beliefs and values regarding patient safety, work to build strategy and rigor around processes and practices, leading to quality outcomes (Sammer, Lykens, Singh, Mains & Lackan, 2010; Danielsson et al., 2014). Organizations strive to create healthy work environments which facilitate achievement of desired clinical outcomes, improve nurse and patient satisfaction, increase nurse retention, and support continuing competency (Wilkinson, 2013). Leaders and organizations are successful when environments are created to provide structure where evidence based policies, procedures, and practices are in place to aid the nurses in delivering clinical care (Kramer, Schmalenberg, & Maguire, 2010; Balakas, Sparks, Steurer & Bryant, 2013; Melnyk et al., 2016).

Many hospitals across the country are evaluating current practice and implementing measures to increase awareness around patient safety and obstetrical outcomes. The evaluation of clinical practice and commitment to improving patient safety and outcomes must begin with the nursing staff. Registered nurses account for the largest group of care providers in healthcare settings, (Calzone et al., 2012) and as patient acuity increases in complexity, ensuring a competent workforce is a critical aspect of meeting the needs of the patient population (Bell, Bossier-Bearden, Henry & Kirksey, 2015; Sprayberry, 2014). Registered nurses, providing

direct patient care, are in a unique position to directly impact quality outcomes and improve healthcare delivery through the adoption of evidence based practice (McKeever et al., 2016). Evidence based nursing practice results in improved patient outcomes, delivery of higher quality care, and a reduction in healthcare costs (Melnik et al., 2016).

A successfully implemented education program will augment initial education for newly hired nursing staff and will support ongoing education for established clinicians. The program will enhance the understanding of core obstetrics learning, and will aid in demonstrating implications for clinical practice. Primary objectives of implementing an evidence based education program for Labor and Delivery nurses include:

1. Improving knowledge, of new and established Labor and Delivery nurses, as evidenced by an increase in pre-to post- intervention scores.
2. Improvement in nursing self-rated competency, in the top five education topics, as evidenced by positive progression through Benner's continuum
3. Improvement in overall self-rated competency regarding the perceived ability to perform as a Labor and Delivery nurse.
4. Demonstrated commitment to patient safety as evidenced by an increase in identification and reporting of significant events.
5. Development of an enhanced annual competency tool.

While a formalized nursing education program is a change to current operations within the unit, the project is well aligned with the organization's strategic plan.

## **Review of the Literature**

### **Search**

A systematic literature search was conducted in Medline, Cumulative Index to Nursing and Allied Health Literature (CINAHL) and PubMed. Key search terms included integrative review, continued competency in nursing, evidenced based practice education, perinatal nurses and labor and delivery nurses. This search yielded over 1,100 results. The search was refined to include the following terms: perinatal nurse competency, evidence based competency, continued learning, evidence based practice, obstetrics competency, nursing leadership, nurse competency, and safety in obstetrics.

### **Inclusion/Exclusion Criteria**

A more specific search was conducted with the following inclusion criteria: published between 2005-2017; published in peer reviewed journals and/or original research. No articles were excluded based on study design or outcomes. Abstracts of over 200 articles were reviewed and were excluded if the focus was nursing students, medical students or those not at the bedside providing clinical care. A gap in the literature was identified by the absence of evidence supporting continued competency assessment and development for established clinicians (Decker, Utterback, Thomas, Mitchell & Sportsman, 2011; Byrd, Burns, & Grossklags, 2013; Wilkinson, 2013). The American Association of Critical Care Nurses (AACN) evidence rating scale was used to assess the quality of the evidence. According to the scale, evidence is ranked A, B, C, D, E and M based on study design (Armola et al., 2009). Refer to Table 4 for additional information on references used in this study.

## **Common Findings**

Several common findings were identified in the literature. Emerging themes specific to implementing an evidence based education program were identified as leader engagement in the adoption and integration of evidence based practice, the impact of evidence based practice on patient safety and outcomes, effective communication, building interprofessional relationships, and the autonomy and confidence of registered nurses integrating evidenced based practice into patient care.

## **Leader Engagement**

Organizational leadership support, at all levels, is essential when moving toward a patient safety culture rooted in evidence based practice. A study by Melnyk et al., (2016) discussed a failure of nurse executives to appreciate the alignment of evidence based practice, patient safety, and improved clinical outcomes. Executive leaders indicated patient safety and the delivery of quality care were priorities but failed to include evidence based practice as priority (Melnyk et al., 2016). Nurse executives are challenged to lead and manage change while providing guidance through the unfamiliar and uncertain. In shepherding an organization through change, the leader is challenged to interrupt the familiar while encouraging acceptance of a new standard or practice. Leading change is a skill critical to the success of a nurse executive or nurse leader. Even though organizations have grown to expect change, possessing a skill set to lead and manage change is overwhelming (Stichler, 2011). Integrating evidence based practice into the footprint of the nurse is an organizational culture change worthy of leader engagement (Mollon et al., 2012; Stokke, Olsen, Espehaug & Nortvedt, 2014). Hospitals must demonstrate commitment to the integration of evidence into practice by empowering nurse leaders to change the organizational culture. Nurse leaders supportive of evidence based practice are visionary and

demonstrate evidence based, best practice leadership traits (Melnik et al., 2016). Strategic leadership, along with the provision of human and financial resources, position organizations for successful application of evidence based practice. The lack of leadership support for cultural and clinical practice changes could hinder the staff nurse adoption of evidence based practice (Tagney & Haines, 2009; Balakas et al., 2013; Stokke et al., 2014).

### **Patient Safety**

Introducing evidence based practice into the clinical setting improves patient safety and quality outcomes while equipping the staff nurse with a credible knowledge base (Mollon et al., 2012; Balakas et al., 2013). Implementing an evidence based education program is an investment in the Labor and Delivery nurses which will improve patient safety and the quality of care delivered by bolstering knowledge and skill (McKeever et al., 2016; Melnik et al., 2016; Sinni et al., 2014). Evidence based education will focus on a standardized approach to reduce variations in clinical practice, thereby improving patient safety and clinical outcomes (Burke et al., 2013; McKeever et al., 2016; Melnik et al., 2016; Sinni et al., 2013).

### **Effective Communication**

All healthcare providers aim to deliver safe patient care. The Institute of Medicine (IOM) report *To Err is Human* heightened the awareness of patient safety, alerting healthcare executives, clinicians, and consumers of its importance (IOM, 1999). The IOM report recognized communication breakdown as the leading cause of patient harm events. Agencies such as The Joint Commission attribute 70-80% of avoidable infant morbidity and mortality and 65-85% of adverse maternal outcomes to poor communication (Lyndon & Kennedy, 2010). Total aversion of adverse maternal and neonatal outcomes is unattainable; however, as organizations demonstrate continued commitment to the delivery of quality care and mitigating risk, a culture



of patient safety becomes priority (Harris, Treanor, & Salisbury, 2006; Lyndon et al., 2015). Skilled, effective, and standardized communication is critical to successful provision of safe care (Raftopoulos et al., 2011; Maxfield et al., 2013; Sinni et al., 2014; Lyndon et al., 2015) and will be a focus when implementing evidence based education in Labor and Delivery.

### **Interprofessional Relationships**

Labor and Delivery units are complex clinical environments where care is provided by an interprofessional team. The fluidity of a Labor and Delivery unit can quickly lead to urgent or emergent circumstances which necessitate skillful coordination of efforts, cohesiveness, and mutual respect among the team members (Ven et al., 2010; Raftopoulos, Savva & Papadopoulou, 2011; Maxfield, Lyndon, Kennedy, O’Keeffe & Zlatnik, 2013; Sinni, Wallace & Cross, 2014). Mutually respectful relationships within the team are identified by shared accountability, a responsibility to speak up when concerns are identified, lack of hierarchy among members, and a shared commitment to quality and safe patient care (Raftopoulos et al., 2011; Balakas et al., 2013; Maxfield et al., 2013; Lyndon et al., 2015). Nurses are integral members of the team whose critical thinking skills and clinical expertise directly impact patient safety (Fero, Witsberger, Wesmiller, Zullo & Hoffman, 2009). An evidence based education program for Labor and Delivery nurses will introduce clinical evidence into daily practice. Integrating evidence into practice has been widely accepted among physician providers; however, despite the expectation to provide patient care based on the best evidence, this is a newer concept for nursing (Tagney & Haines, 2009; Mollon et al., 2012; Balakas et al., 2013). When evidence based practice is integrated into the footprint of the Labor and Delivery nurse, interprofessional relationships are strengthened and critical thinking skills are sharpened (Balakas et al., 2013; Stokke et al., 2014).

**Autonomy and Confidence**

There is an assumed accountability and responsibility for autonomous decision making regarding patient care. Nurses are better positioned to make informed decisions relative to patient care when evidence based practice is adopted and promoted (Kramer et al., 2010). The broadened knowledge base, which is attributed to an overall acceptance of evidence based practice, aides in the balance of clinical decision making and building relationships with patients and families. Clinical skill and knowledge instill confidence in the bedside nurse. Nurses are better prepared to confidently answer questions posed by patients and families when armed with clinical evidence. In addition, nurses are using the knowledge gained from practicing in an environment supportive of integrating evidence and research to assist patients in making the best care decisions (Balakas et al., 2013; Stokke et al., 2014). Implementation of an evidence based education program will support improved decision making, autonomy in practice, and nurse confidence.

**Theoretical Framework**

The work of Patricia Benner provides the theoretical underpinnings for this project (Benner, 1982). The novice to expert theory was adapted from the 1980 Dreyfus model of skills acquisition (Khan & Ramachandran, 2012). Benner aligned the Dreyfus model with nursing practice by detailing the similarities in the incremental steps taken to achieve optimal clinical practice performance. The continued exercise of skills acquisition spans from novice to expert (Benner, 1982; Benner, 2001; Khan & Ramachandran, 2012). Benner's theory is evident throughout the project as evidenced by the use of evaluation tools which include a modified version of Benner's levels of aptitude: novice, advanced beginner, competent, proficient, and expert (Benner, 1982; Benner, 2001). As the nurses move through the continuum of Benner's

scale, the benefit to the community, hospital, professional colleagues, and patients will be demonstrated using process and terminal outcomes.

## **Methods and Procedures**

### **Participant Population**

The studied Labor and Delivery unit is under the direction of a nurse manager and a director of nursing who have 24 hour/7 days per week operational accountability. Care is delivered by seven obstetricians and three nurse midwives. Anesthesia services are provided by a team of physicians who also provide care to patients in the main operating room. The nursing staff is comprised of 18.1 full time equivalents ( $n=20$ ) working PRN, full and part time on day, evening, and night shifts. To offer a better description of the sample population, the nursing staff completed a socio-demographic survey (Appendix A).

The survey outcomes revealed the average age of the Labor and Delivery nurses is forty years. The average nurse in this study has ten years of experience and the highest degree held by the average nurse is a Bachelor of Science in Nursing (BSN). The average nurse works 32.50 hours/week. One staff nurse holds a certification from the National Certification Corporation in Inpatient Obstetrics, and one nurse is a Sexual Assault Nurse Examiner. Four nurses are members of the Association of Women's Health Obstetric and Neonatal Nurses. Registered nurses comprise the largest component of the skill mix; however, obstetric technicians and unit secretaries offer additional support to nursing services. A Newborn Nursery nurse offers presence and support to the Labor and Delivery team and is responsible for immediate stabilization and care of the newborn. The Nursery Nurse works in conjunction with the Labor and Delivery nurses and is the expert in delivering clinical care to the newborn.

**Setting**

The studied community hospital serves a metropolitan area and is licensed for 239 inpatient beds. In August, 2015, the hospital was acquired by a large, 70 hospital system. Financial viability, long term organizational sustainability, quality, patient safety, and organizational growth became the operational focus of the partnership between the system and community hospital. Clinically, the partnership affords the community hospital the opportunity to share best practices and strategies aimed at reducing patient harms among hospital peers within the larger system.

The Labor and Delivery unit is part of the Women's Service Line and consists of seven labor rooms, four triage beds, two operating suites, and one post anesthesia care bed. The unit is equipped with central surveillance which allows all members of the healthcare team the ability to view fetal tracings from multiple locations within the unit. Two of the labor rooms are equipped with hydrotherapy tubs for patient use during labor. Patients from neighboring cities and states are drawn to the community hospital because of the flagship obstetrics care, where a natural childbirth, low intervention approach to labor, niche has been created. Unique to the geographic area, midwives are the primary providers of obstetrics care. Approximately 1,300 babies are delivered annually. Key stakeholders at all levels of the organization have been identified and include the hospital senior leadership team, Labor and Delivery nursing staff, the Women's Service Line nursing leadership, physicians, midwives, and hospital Quality and Risk Management departments. Stakeholders external to the organization have been identified as the executive leadership teams of the acquiring hospital system, patients, and families seeking obstetrics care at the community hospital.

The full complement of the Women's Service Line includes the Mother Baby Unit and the Newborn Nursery. The community hospital has forged a partnership with a neighboring tertiary care hospital which provides neonatology coverage and attendance at deliveries. The neonatologists are working with the leadership within the community hospital to expand the level of care provided in the Nursery to a Level II Neonatal Intensive Care Unit (NICU). At this time, infants requiring a higher level of care are transferred to the tertiary facility. Expanding services would enable the nursing staff to care for infants as early as 32 weeks gestation. The Level II NICU demonstrates the hospital's commitment to keeping care in the community and supporting the most vulnerable patients and families.

**Intervention**

The entire Labor and Delivery nursing staff, obstetricians, certified nurse midwives, and anesthesia providers received an invitation to participate in the study (Appendix B, Appendix C). All participants received a pre-intervention needs assessment which detailed ten labor and delivery specific topics or conditions. Significant obstetrics events included the management of maternal hemorrhage, precipitous delivery, newborn transitional care, management of a patient on magnesium sulfate for preeclampsia, shoulder dystocia, fetal heart rate interpretation, breastfeeding support, caring for the patient in obstetrics triage, management of Pitocin for labor induction, and bedside emergencies in the labor patient (Table 1). Brief definitions of Benner's continuum were included on the pre-intervention needs assessments (Benner, 2001). The medical providers and certified nurse midwives completed the pre-intervention needs assessment which evaluated their current perceived proficiency, of the Labor and Delivery nurses, related to the ten labor and delivery specific topics or conditions (Appendix D). Staff engagement and involvement in planning educational offerings adds to project approval and success (Bridges,

Herrin, Swart, & McConnell, 2013); therefore, the Labor and Delivery nurses completed the same pre-intervention needs assessment, as a self-evaluation, to determine current perceived proficiency in the ten specific topics or conditions (Appendix E). In addition, the registered nurses were asked to respond to a question which was aimed at an overall, self-rated competency, addressing the perceived ability to function as a Labor and Delivery nurse. This also used Benner's continuum as a guide (Benner, 2001).

With the assistance of a statistician, results from provider and nursing staff assessments were aggregated and data were analyzed using the IBM SPSS statistical software. The top five topics or medical conditions with the lowest mean score became the priority focus for the evidence based education program (Table 2). The topics included: caring for a patient on Magnesium Sulfate for preeclampsia, shoulder dystocia, newborn transitional care, maternal hemorrhage, and acute bedside emergencies (prolapsed cord, placental abruption, emergency Cesarean section). Careful development of curriculum and associated outcome measures aided the success of the project (Chappell & Koithan, 2012).

Table 1

*Significant Obstetrics Events*

	<b>Obstetrics Event</b>
1	Preeclampsia and Magnesium Sulfate
2	Shoulder Dystocia
3	Fetal Heart Rate Interpretation
4	Bedside Emergencies
5	Maternal Hemorrhage
6	Newborn Transitional Vital Signs

7	Breastfeeding Support
8	Care for Patient in Triage
9	Precipitous Delivery
10	Management of Pitocin for Labor

Table 2

*Mean Scores as Result of Needs Assessment*

	<b>Q1</b>	<b>Q2</b>	<b>Q3</b>	<b>Q4</b>	<b>Q5</b>	<b>Q6</b>	<b>Q7</b>	<b>Q8</b>	<b>Q9</b>	<b>Q10</b>
Mean Score	2.85	3.00	3.38	2.59	2.59	3.32	3.62	3.38	3.32	3.71

Each topic became a learning module and the focus of an intervention aimed at continuing education and enhancing competency. Strategic development of an education plan is critical to its success and educational offerings must be inventive, interdisciplinary, and collaborative. Additional consideration was given to generational variances and nurse perception of learning and competency assessment (Maddox, Waller-Wise, & Weed, 2014; Bridges et al., 2013). In response to the pre-intervention needs assessment, the education and associated intervention were developed and facilitated by the doctoral student with the assistance of Labor and Delivery nurse manager. Learning sessions were accomplished by integrating on line, simulation, didactic, and self-paced opportunities for the Labor and Delivery nurses. A nonexperimental pre-and post-test design was used to evaluate the effectiveness of the evidence based education and associated intervention.

Prior to each learning opportunity, the nursing staff completed a pre-test specific to the education topic. One month following the learning intervention, a post-test was administered. Due to the nature of the study, and the statistical tests applied, the pre and post-tests are identical. The learning opportunities were required of all Labor and Delivery nursing staff. The content of the learning sessions comprised a portion of the annual competency requirement for the Labor and Delivery nurses. Upon completion of all sessions, an overall evaluation of the program was administered. Results will be used to drive future learning and curriculum.

The focus of the evidence based education for the Labor and Delivery nursing staff was to decrease knowledge deficit related to the top five obstetrics events or conditions, and included three specific components: content development, content delivery, and evaluation (Chappell, & Koithan, 2012). Care of the patient in Labor and Delivery is provided by a multidisciplinary team, and content development must give attention and focus to teamwork and interdisciplinary collaboration (Ironsides, 2008; Ven et al., 2010). As patient safety remains a priority, content development also considered skills aimed at early recognition of worsening patient conditions (Fero, Witsberger, Wesmiller, Zullo, & Hoffman, 2009). Finally, the comparison of pre-and post- intervention scores evaluated performance.

### **Topics for Education and Interventions**

The first topic was preeclampsia and caring for the patient on Magnesium Sulfate. Upon completion of the pre-test (Appendix F), the Labor and Delivery nurses completed a self-paced learning module (Appendix G). The module was developed using content from the California Maternal Quality Care Collaborative Preeclampsia Toolkit (Druzin, Shields, Peterson & Cape, 2013) and the American College of Obstetricians and Gynecologists Committee Opinion 692, *Emergent Therapy for Acute-Onset, Severe Hypertension During Pregnancy and the Postpartum*



*Period* (2017). Components of nursing assessments, interventions, and clinical care were also integrated into the module (Mattson & Smith, 2016). Continued professional development and learning coupled with the integration of clinical evidence into practice, benefits patients and improves outcomes (Davis, 2015). A post-test was administered one month following completion of the self-study module.

The second topic was the management of shoulder dystocia. Upon completion of the pre-test (Appendix H), the nursing staff participated in a simulation drill which was facilitated by a staff obstetrician. The simulation was required for all staff within the Labor and Delivery unit as the focus was not only on the identification and management of shoulder dystocia, but also on the necessary, effective communication, and interdisciplinary collaboration (Auguste et al., 2012; Highfield, Swaller & Chu, 2016). The obstetrician was involved in scheduling the drills and was present to facilitate all of them. There was careful consideration given to the dynamics of the environment to ensure it was free of judgment and was respected as a place of learning. The obstetrician began each drill with a briefing to set the stage and outline the clinical scenario. Briefing the participants aided in setting the expectations and decreasing participant anxiety just as the debriefing, following the event, allowed for careful critique of team performance (Highfield et al., 2016; Page-Cutrara, 2014). The Labor and Delivery nurses completed the post-test in the month following the simulation experience.

The third topic was newborn transitional vital signs. In the Labor and Delivery unit, the goal is to safely keep mothers and infants together during the immediate post-partum period. The minutes following delivery are precious and the team works carefully to ensure this time is uninterrupted. The Newborn Nursery nurse is responsible for stabilization of the newborn at the time of delivery. Kangaroo care is practiced with all vaginal deliveries unless the mother or

infant is not medically stable. There is a dedicated Newborn Nursery nurse in the operating room who aides in the facilitation of kangaroo care immediately following cesarean section. During this time, the Newborn Nursery nurse is responsible for the transitional assessment, to include newborn vital signs.

In order to best utilize the skill set of the Newborn Nursery nurse and to assure availability for other deliveries or more urgent situations, the Labor and Delivery nurses worked to sharpen skills specific to assessing newborn vital signs. The pre-test was created (Verklan & Walden, 2015) and distributed (Appendix I). Upon completion, the Labor and Delivery nurses were given a peer evaluation tool to engage the Newborn Nursery in real time verification of the transitional assessment (Appendix J). The interactive tool afforded the Newborn Nursery nurse the opportunity to provide real time direction and feedback to the Labor and Delivery nurse. While the Nursery nurse will always be appreciated as expert in caring for the newborn, this education module helped to broaden the knowledge base and skill of the Labor and Delivery nurses. Once the peer evaluation tool was complete, the Labor and Delivery nurses received the post-test.

The fourth topic was the management of maternal hemorrhage. Postpartum hemorrhage has been identified as the leading cause of maternal morbidity and mortality (Al Wattar, Tamblyn, Parry-Smith, Prior & Nelson, 2017; Cortet et al., 2015; Edhi, Aslam, Naqvi & Hashmi, 2013), which further validates the need for continued education. While the Labor and Delivery nurses are able to manage postpartum hemorrhage, more formal processes and interventions such as utilizing hemorrhage guidelines and quantifying blood loss, needed to be introduced. Nursing leadership from the Women's Service Line worked closely with leaders in the Laboratory and Blood Bank, along with obstetrics and anesthesia providers to draft hemorrhage guidelines

(Lyndon, Lagrew, Shields, Main & Cape, 2015). The didactic component of the intervention was facilitated by nursing leadership within the Women's Service Line; this intervention addressed risk factors for hemorrhage, continued evaluation and assessment during labor, recognition of postpartum hemorrhage, management of the third stage of labor, and quantifying blood loss. Pre and post tests were completed as appropriate (Appendix K).

The fifth topic was the management of bedside emergencies, defined as umbilical cord prolapse, placental abruption or emergency cesarean delivery. By nature, obstetrics is unpredictable and any clinical situation can escalate quickly to an emergency (American College of Obstetricians and Gynecologists, 2014; Lipman, Carvalho, Cohen, Druzin & Daniels, 2013). The Labor and Delivery nurses completed the pre-test (Appendix L) and received a case study which would serve as the intervention (Appendix M). The case study approach requires the bedside nurse to provide a detailed clinical assessment and describe interventions while utilizing critical decision making skills (Wong & Myers, 2015). Upon completion of the case study, feedback was provided and the post-test was administered.

### **Evaluation Plan**

Measuring success of the project included careful evaluation of elements of skills performance, professional attitude, and knowledge (Chappell & Koithan, 2012). Means of evaluating learning included the pre-intervention needs assessment and pre and post test scores. It was necessary for those involved in evaluating the project to have a good understanding of clinical care in obstetrics and to be able to perform the skills (Chappell & Koithan, 2012). Because of demonstrated clinical expertise, the Labor and Delivery nurse manager was involved in the evaluation process.

The research hypothesis for this project is:  $H_A$ : There is a relationship between an evidence based education program and decreasing knowledge deficit among Labor and Delivery nurses in a community hospital setting, as evidenced by statistical differences in pre- and post-test scores. Statistical significance will be indicated by a  $p$  value  $\leq .05$ .

Participant feedback is also an integral factor in the evaluation plan. Input from the nursing staff will provide direction for future learning opportunities and ultimately improve patient care (Maddox, Waller-Wise, & Weed, 2014). Continued learning, competency assessment, and development are essential to the provision of safe care, and must be evaluated regularly (Maddox et al., 2014). The post learning evaluation included staff perception and feedback to ensure the program met the needs of the participants and promoted the delivery of safe patient care.

### **Data Collection and Analysis**

All data were analyzed using IBM SPSS software. Due to participant population and study design, independent T-tests, paired T-tests and Pearson's correlation were used to analyze the data. To maintain anonymity, all participants received an alphanumeric code. Participants were asked to use this combination of letters and numbers as the single source identifier when submitting all assessments or pre/post-tests. The Doctor of Nursing Practice student was responsible for the random assignment of the alphanumeric codes. The information was secured until the project was completed. The project carried no risk to the participants and upon receipt of approval from the Institutional Review Board of the affiliated university (Appendix N) and executive leadership from the community hospital, the project was initiated with the distribution of invitations to participate (Appendix B, Appendix C).

**Barriers to Implementation and Sustainability**

An analysis was conducted, evaluating the strengths, weaknesses, opportunities, and threats (SWOT) of implementing an evidence based education program. Project strengths which contributed to successful implementation were identified as a committed senior leadership team, a supportive Chief Nursing Officer, engaged team of physicians and advanced practice nurses, an eager Labor and Delivery nursing staff, and a committed project leader. Weaknesses which could have inhibited implementation were identified as a limited education budget and financial constraints, limited human resources, as evidenced by the absence of a dedicated nurse educator for the Women's Service Line, staff resistance to change, and perceived addition to the nurse's workload, manifested as required educational sessions. Opportunities for growth as a result of implementing the education program included improved relationships with physician and advanced practice nurse providers, improved patient safety and outcomes, an increase in reporting of significant obstetric events, and a more engaged team of Labor and Delivery nurses. The recent acquisition of the community hospital, coupled with being part of a larger health care system, affords the Labor and Delivery nurses a wider array of educational opportunities. Additionally, education modules and materials used in the capstone project could be shared with other organizations within the healthcare system. Threats which are external to the hospital environment but could become barriers to successful implementation were identified as the lack of similar education programs by which data can be benchmarked. The capstone project presents a unique opportunity to create innovative evidence based education sessions for Labor and Delivery nurses. Steps to sustain the project include developing a staff led education committee with accountability to plan future learning opportunities. The committee would empower and engage members as a shared governance model is adopted (Kramer et al., 2010). Front-line

nurse participation on the committee will aide in the understanding, and adoption, of evidence based practice. There will also be better recognition of the connection between evidence based education efforts and improved patient outcomes (Bridges et al., 2014; McKeever et al., 2016; Melnyk et al., 2016).

### **Resources**

Labor and Delivery staff nurse participation in the project was supported by hospital leadership. The project required time from the DNP student, statistician, the Labor and Delivery nurse manager, the staff nurses, and one of the obstetricians. Hospital space was used to meet the needs of any education sessions and the simulation drills were held in a labor room. An estimation of time dedicated to the capstone project is demonstrated in Table 3.

Table 3

#### *Estimated Time Dedicated to Capstone Project*

<b>Project Participant</b>	<b>Estimated Project Hours</b>
DNP student	300
Nurse Manager	60
Staff Nurses Total	200
Statistician	5
Obstetrician	8

## Results

All data for this project were analyzed using the IBM SPSS statistical software. Data from the Labor and Delivery nurse and provider needs assessments were analyzed, and those with the lowest mean scores became the focus of the education modules (Table 2). The first paired-sample T-test compared the difference in each, intervention specific, pre-and post-test scores. Among all participants ( $n=14$ ), there was a minimal increase in the average pre-and post-test scores; however, there was no statistically significant change from pre-to post-test scores in any of the interventions. Given the limited sample size, it is not unexpected to see a lack of significant change among the participants. As a whole, the participants displayed growth and gained knowledge, but it cannot be determined if this was due to program impact or random chance.

The next paired-sample T-test compared the overall self-rated competency of the Labor and Delivery nurses pre-and post-intervention. This comparison focused on perceived ability to perform as a nurse in Labor and Delivery. There was a statistically significant difference in the overall self-rated perception between pre-and post-test assessments ( $-2.416, p < .05$ ), indicating positive progression through Benner's continuum. Of note, there was a statistically significant difference in pre-and post-test scores specific to the management of preeclampsia and a patient on Magnesium Sulfate ( $-2.828, p < .05$ ), managing shoulder dystocia ( $-2.924, p < .05$ ), newborn transitional care ( $-2.511, p < .05$ ), and management of maternal hemorrhage ( $-3.229, p < .01$ ). There was no demonstrated change or statistical significance in pre-and post-test scores regarding the ability to manage bedside emergencies. This is likely because the nurses had preexisting knowledge and were already equipped to handle bedside emergencies in Labor and Delivery. The nurses already have a perceived level of confidence and competence in managing

umbilical cord prolapse, placental abruption and emergency cesarean delivery. There was no demonstration of knowledge gained or growth with this intervention. In four of the five interventions, the nurses in Labor and Delivery gained knowledge.

The Pearson's R correlation was used to determine relationships between knowledge and growth and nurse socio-demographic data. The associated factors include participant age (mean age of population is 40 years); education (BSN or ADN); experience in months (more than 100 months or less than 100 months); shift (day shift/1<sup>st</sup> shift or night shift/2<sup>nd</sup> shift); and worked hours per week (more than 36 hours or less than 36 hours). There was a negative correlation between age and growth from the third intervention, newborn transitional care. The nurses who are younger than forty demonstrated more growth and more knowledge gained than those over forty ( $r = -0.576, p < .05$ ). There was a positive correlation between age and experience which demonstrates that as the nurse ages, experience is gained ( $.750, p < .01$ ); therefore, the nurses with less experience are under 40 years of age. There is a positive relationship between shift worked and education ( $r = .652, p < .05$ ). The nurses who have a BSN are more likely to work second shift. There were no other unique relationships found with other socio-demographic data and the change from pre-and post-intervention scores.

The final statistical analysis was an independent sample T-test. This test determined the variation in performance between the socio-demographic factors and each of the pre-and post-test scores. There was a statistically significant difference between nurses with ADN and those with BSN specific to the third intervention, newborn transitional care and vital signs. The test revealed the nurses with a BSN demonstrated statistically significant growth and knowledge gained from the education regarding newborn transitional care and vital signs assessment ( $-2.537, p < .05$ ). There was a statistically significant difference in growth and knowledge gained



between the nurses over age 40 and those under age 40 specific to preeclampsia and caring for a patient on Magnesium Sulfate and newborn transitional care and vital signs assessment. The nurses under 40 outperformed the nurses over 40 in pre-and post-tests for both interventions (2.248,  $p<.05$ ; 2.840,  $p<.05$ ). There was no significant difference in pre-and post-test scores between the nurses who work more than 36 hours/week and those who work less than 36 hours/week. Both groups demonstrated growth due to the interventions, but there was no significant difference between the two groups. The next comparison was between the nurses with more than 100 months of experience and those with less than 100 months of experience. There was a statistically significant difference in growth and knowledge gained between the two groups specific to preeclampsia and caring for a patient on Magnesium Sulfate. Based on pre-and post-test scores, the nurses with less than 100 months of experience demonstrated more growth and more knowledge gained than those with more than 100 months of experience in caring for a patient with preeclampsia receiving Magnesium Sulfate (2.852,  $p<.05$ ). Based on previous discussion regarding participant age and experience, it is understood that those nurses with less experience are younger and demonstrate more growth and gain more knowledge than their older colleagues specific to caring for the patient receiving Magnesium Sulfate for preeclampsia.

Upon completion of all learning modules and pre-and post-tests, the nurses were asked to complete an overall evaluation of the capstone project. A ten point Likert scale was used where 1= program added no value and 10= program added value. The first comparison was between those with more than 100 months of experience and those with less than 100 months of experience. While both groups rated the overall program as adding value, there was no difference between the two groups. The next comparison was between age groups, the nurses

over 40 years of age and those under 40 years of age. Like the experience groups, the two age groups assigned a high score to the overall project indicating it added value; however, there was no difference between the two age groups. There was a statistically significant difference in the evaluation of the overall program between nurses working more than 36 hours per week and those working less than 36 hours per week ( $-2.220, p<.05$ ). The nurses working more than 36 hours per week perceived greater value in the overall program as compared to their colleagues working less than 36 hours per week. The final comparison was between the nurses with a BSN and the nurses with an ADN. Regarding the perceived overall value of the program, there was no difference between the two groups.

### **Discussion**

Recognition of significant obstetric events or conditions is as important as event reporting. The community hospital has an event reporting system, and it is common and accepted practice for the Labor and Delivery nurses to enter significant safety and risk events into the system. Review of the number of reported events indicated that from December 2015-July 2016, 100 significant events were reported by the Labor and Delivery nurses. There were 82 significant events reported from August 2016-March 2017. While there was not an increase in reported events as a result of participation in the education program, it was noted the quality of the information reported was improved. The nurses provided more detail, specific to the clinical event being reported. This was believed to be as a result of a heightened awareness to the events which should be reported in the system.

The culture of safety within the unit is strengthening as the nurses and providers give focus to developing highly reliable processes such as reducing variation in practice through standardization (Sammer et al., 2010). As the interprofessional team works together to

understand the defect in the process or system failure, the focus becomes less on individual fallibility (Sammer et al., 2010). As communication within the team improves, relationships among members are enhanced and there is less hesitancy to speak up when patient safety is compromised (Raftopoulos et al., 2011; Balakas et al., 2013; Maxfield et al., 2013; Lyndon et al., 2015). The capstone project has increased awareness of significant obstetric events and the reporting of process and system failures which could lead to a decrease in adverse maternal or neonatal outcomes.

The Labor and Delivery nurses participate in an annual competency skills day which, by nature, is task oriented. Attention is given to the ability of the nurse to perform a particular skill (Chappell & Koithan, 2012). Competency evaluation should address critical thinking, effective communication, and team dynamics (Maddox et al., 2014). Prior to the project, the annual evaluation tool was a checklist. The development of an enhanced annual competency evaluation tool for the Labor and Delivery nurses (Appendix O) incorporated more interactive, dynamic and team oriented topics. In addition, the tool allowed for immediate feedback and discussion around a plan for remediation if necessary. Future annual competency evaluations will include participation in multidisciplinary simulation drills where the focus will be on patient safety, clinical outcomes, evidence based care, standardized processes, and teamwork (Burke et al., 2013; Maddox et al., 2014).

### **Limitations**

A primary study limitation was the small sample size, which could make the findings of this study less generalizable. The original sample was comprised of 20 Labor and Delivery nurses and through attrition, family medical leave, and scheduled time off, sample size varied from 14-18 nurses. Another study limitation was identified as the assumed individual

completion of each pre-and-post-test. While the expectation was to complete each item individually, there was no formal discussion and no means to monitor compliance. The absence of a nurse educator, dedicated to the Women's Service Line, is a noticeable limitation, not only within the context of the capstone project, but for future continued education needs of the nursing staff. A recommendation for a nurse educator was made to the executive leadership team of the community hospital. Another study limitation was the participation of only one staff obstetrician in the shoulder dystocia simulation drill. A tenet of patient safety is a standardized approach to the management of critical situations. This could be in the form of clinical guidelines, protocols, and standardized communication (McKeever et al., 2016; Melnyk et al., 2016; Sinni et al., 2014). A standardized approach is difficult to attain when only one physician is representing the group of practicing obstetricians and midwives. Future simulation drills should involve other practitioners within the Labor and Delivery unit.

While not a primary project objective, a gap was identified in the integration of current evidence and best practices into existing policies and order sets. Identifying this defect in its current state afforded the opportunity for multidisciplinary collaboration to rewrite policies, order sets, and draft maternal hemorrhage guidelines. In addition, as the learning modules and education interventions occurred, rich discussion ensued around current processes, opportunities for process improvement, and supply and equipment needs.

As a result of the project, the need for continued simulation drills became apparent. Significant events such as shoulder dystocia are ideal for learning in a simulated environment (Calvert et al., 2013). Future simulation specific to maternal hemorrhage will be multidisciplinary and interdepartmental. Involving multiple departments, such as Laboratory and Blood Bank, will increase awareness of the severity of maternal hemorrhage and will allow for

process development, process improvement, and standardization which are known attributes of simulation (Highfield et al., 2016).

During the time of the capstone project, four Labor and Delivery nurses obtained certification from the National Certification Corporation in Inpatient Obstetrics. Although this was not an intent of the project, obtaining certification aligns well with the project aims of growth, continued education, gaining knowledge, and progression through Benner's continuum.

### **Recommendations**

Implementing an evidence based education program for Labor and Delivery nurses is a first step in improving the provision of safe patient care. Introducing evidence based practice into the clinical setting is truly a culture change, accomplished under the direction of a visionary leader (Mollon et al., 2012; Stokke et al., 2014). Future work to replicate this project should begin with a needs assessment to determine the clinician's perceptions of evidence based practice and how evidence based care impacts patient outcomes (Sidani et al., 2016).

The evolution of integrating evidence into practice is truly a work in progress. The nursing workforce possesses varied levels of understanding and skill regarding evidence based practice (Mollon et al., 2012; Balakas et al., 2013; Stokke et al., 2014). Many barriers to implementing evidence based practice have been identified and nurse leaders are challenged to remove barriers, aiding in the adoption of best practice (Tagney & Haines, 2009; Balakas et al., 2013; Stokke et al., 2014). When implementing an evidence based education program for Labor and Delivery nurses, leadership engagement will advance as critical to its success (Mollon et al., 2012; Stokke et al., 2014). Clinical implications of integrating evidence based education into practice include improved interprofessional relationships and better communication among the team. When nurses feel empowered and knowledgeable, communication becomes a strategic

tool to assist the team in providing the best patient care (Tagney & Haines, 2009; Mollon et al., 2012; Balakas et al., 2013). Nurses practice with more autonomy and confidence when clinical decisions are rooted in evidence (Balakas et al., 2013; Stokke et al., 2014). Sustaining an evidence based education program for Labor and Delivery nurses will require the confident guidance of an engaged nurse leader.

### References

- Armola, R. R., Bourgault, A. M., Halm, M. A., Board, R. M., Bucher, L., Harrington, L., ... Medina, J. (2009). AACN Levels of Evidence: What's New? *Critical Care Nurse*, 29(4), 70-73.
- Auguste, T., Goffman, D., Deering, S., Pliego, J., Andreatta, P., Erickson, L., & Daniels, K. (2012). Simulation-based team training in obstetric emergencies. *Contemporary OB/GYN*, May 2012, 30-39.
- Al Wattar, B., Tamblyn, J., Parry-Smith, W., Prior, M., & Van Der Nelson, H. (2017). Management of obstetric postpartum hemorrhage: a national service evaluation of current practice in the UK. *Risk Management and Healthcare Policy*, 10. 1-6.
- American College of Obstetricians and Gynecologists. (2017). Emergent therapy for acute-onset,

- severe hypertension during pregnancy and the postpartum period. Committee opinion no. 692. *Obstetrics and Gynecology*, 129, 90-95.
- American College of Obstetricians and Gynecologists. (2006). Postpartum hemorrhage. Practice bulletin no. 76. *Obstetrics and Gynecology*, 108(4), 1039-1047.
- American College of Obstetricians and Gynecologists. (2014). Preparing for clinical emergencies in obstetrics and gynecology. Committee opinion no. 590. *Obstetrics and Gynecology*, 123, 722-725.
- American College of Obstetricians and Gynecologists. (2002). Shoulder dystocia. Committee opinion no. 40. *Obstetrics and Gynecology*, 100(5), 1045-1050.
- Balakas, K., Sparks, L., Steurer, L., & Bryant, T. (2013). An outcome of evidence-based practice education: Sustained clinical decision-making among bedside nurses. *Journal of Pediatric Nursing*, 28, 479-485. <http://dx.doi.org/10.1016/j.pedn.2012.08.007>.
- Bell, R., Bossier-Bearden, M., Henry, A., & Kirksey K. (2015). Transitioning experienced registered nurses into an obstetrics specialty. *The Journal of Continuing Education in Nursing*, 26(4), 187-192.
- Benner, P. (1982). From novice to expert. *American Journal of Nursing*, 82(3), 402-407
- Benner, P. (2001). *From novice to expert: excellence and power in clinical nursing practice/ a commemorative edition*. Upper Saddle River, NJ: Prentice Hall Health.
- Bridges, R., Herrin, D., Swart, T., & McConnell, M. (2014). Creating an innovative educational structure to support best practice among novice nurses. *The Journal of Continuing Education in Nursing*, 45(2), 60-64. <http://doi:10.3928/00220124-20140122-02>.

- Burke, C., Grobman, W., & Miller, D. (2013). Interdisciplinary collaboration to maintain a culture of safety in a labor and delivery setting. *The Journal of Perinatal and Neonatal Nursing*, 27(2), 113-123.
- Byrd, F., Burns, B., & Grossklags, B. (2013). An empirical evaluation of the adequacy of self-assessed knowledge competency in a certified population of women's health care nurse practitioners. *Journal of Nursing Education and Practice*, 3(6), 11-20.
- Calvert, K., McGurgan, P., Debenham, E., Gratwick, F., & Maouris, P. (2013). Emergency obstetric simulation training: How do we know where we are going, if we don't know where we have been? *Australian and New Zealand Journal of Obstetrics and Gynaecology*, 53. 509-516. <http://doi:10.1111/ajo.12120>.
- Calzone, K., Jenkins, J., Yates, J., Cusack, G., Wallen, G., Liewehr, D., Steinberg, S., & McBride, C. (2012). Survey of nursing integration of genomics into nursing practice. *Journal of Nursing Scholarship*, 44(4), 428-436
- Camune, B. & Brucker, M. (2007). An overview of shoulder dystocia: The nurse's role. *Nursing For Women's Health*, 11(5), 490 – 498.
- Chappell, K., & Koithan, M. (2012). Developing a skills-based competency course. *The Journal of Continuing Education in Nursing*, 43(12), 535-536. <http://doi:10.3928/00220124-20121120-93>.
- Cortet, M., Maucort-Boulch, Deneux-Tharaux, C., Dupont, C., Rudigoz, R., Roy, P., & Huissoud, C. (2015). Severity of post-partum hemorrhage after vaginal delivery is not predictable from clinical variables available at the time post-partum hemorrhage is diagnosed. *Journal of Obstetrics and Gynaecology Research*, 41(2), 199-206.



- Danielsson, M., Nilsen, P., Ohrn, A., Rutberg, H., Fock, J., & Carlford, S. (2014). Patient safety subcultures among registered nurses and nurse assistants in Swedish hospital care: a qualitative study. *BMC Nursing, 13*(39). <http://www.biomedcentral.com/1472-6955/13/39>.
- Davis, J. (2015). Education through self-directed learning. *Australian Nursing & Midwifery Journal, 23*(1), 26-28.
- Decker, S., Utterback, V., Thomas, M., Mitchell, M., & Sportsman, S. (2011). Assessing continued competency through simulation: a call for stringent action. *Nursing Education Perspectives, 32*(2), 120-125.
- Druzin, M., Shields, L., Peterson, N., & Cape, V. (2013). Improving health care response to preeclampsia: a California quality improvement toolkit. *California Maternal Quality Care Collaborative*. Retrieved from <https://www.cmqcc.org/resources-tool-kits/toolkits/preeclampsia-toolkit>.
- Edhi, M., Aslam, H., Naqvi, Z., & Hashmi, H. (2013). Post partum hemorrhage: causes and management. *BMC Research Notes, 6*(236). <http://doi:10.1186/1756-0500-6-236>.
- Fero, L., Witsberger, C., Wesmiller, S., Zullo, T., & Hoffman, L. (2009). Critical thinking ability of new graduate and experienced nurses. *Journal of Advanced Nursing, 65*(1), 139-148. <http://doi:10.1111/j.1365-2648.2008.04834.x>.
- Harris, K., Treanor, C., & Salisbury, M. (2006). Improving patient safety with team coordination: challenges and strategies of implementation. *JOGNN, 35*, 557-566. <http://doi:10.1111/j.1552-6909.2006.0073.x>.

- Highfield, M., Scharf-Swaller, C., & Chu, L. (2016). Effect of nurse-led review plus simulation on obstetric/perinatal nurses' self-assessed knowledge and confidence. *Nursing for Women's Health, 20*(6) 568-581.
- Institute of Medicine. (1999). *To err is human: Building a safer health system*. Washington, DC: The National Academy Press.
- Ironside, P. (2008). Safeguarding patients through continuing competency. *The Journal of Continuing Education in Nursing, 39*(2), 92-94.
- Khan, K., & Ramachandran, S. (2012). Conceptual framework for performance assessment: competency, competence and performance in the context of assessments in healthcare – deciphering terminology. *Medical Teacher, 34*, 920-928.  
<http://doi:10.3109/0142159x.2012.722707>.
- Kramer, M., Schmalenberg, C., & Maguire, P. (2010). Nine structures and leadership practices essential for a magnetic (healthy) work environment. *Nursing Administration Quarterly, 34*(1), 4-17.
- Lipman, S., Carvalho, B., Cohen, S., Druzin, M., & Daniels, K. (2013). Response times for emergency cesarean delivery: use of simulation drills to assess and improve obstetric team performance. *Journal of Perinatology, 33*, 259-263.
- Lyndon, A., & Kennedy, H. (2010). Perinatal safety: from concept to nursing practice. *Journal of Perinatal Neonatal Nursing, 24*(1), 22-31.  
<http://doi:10.1097/JPN.0b013e3181cb9351>.
- Lyndon, A., Johnson, M., Bingham, D., Napolitano, P., Joseph, G. Maxfield, D., & O'Keeffe, D. (2015). Transforming communication and safety culture in intrapartum care: a multi-organization blueprint. *JOGNN, 00*, 1-9. <http://doi:10.1111/1552-6909.12575>.

- Lyndon, A., Lagrew, D., Shields, L., Main, E., Cape, V. (2015). Improving health care response to obstetric hemorrhage version 2.0. *California Maternal Quality Care Collaborative*. Retrieved from <https://www.cmqcc.org/resources/obstetric-hemorrhage-20-toolkit>.
- Maddox, B., Waller-Wise, R., & Weed, L., (2014). Perinatal nurses' perceptions of competency assessments. *The Journal of Continuing Education in Nursing*, 45(10), 453-460. <http://doi.10.3928/00220124-20140925-17>.
- Mattson, S., & Smith, J. (2016). *Core curriculum for maternal-newborn nursing*. St. Louis, MO: Elsevier
- Maxfield, D., Lyndon, A., Kennedy, H., O'Keeffe, D., & Zlatnik, M. (2013). Confronting safety gaps across labor and delivery teams. *American Journal of Obstetrics & Gynecology*, 209(5), 1-12. <http://doi.10.1016/j.ajog.2013.07.013>.
- McKeever, S., Twomey, B., Hawley, M., Lima, S., Kinney, S., & Newall, F. (2016). Engaging a nursing workforce in evidence-based practice: introduction of a nursing clinical effectiveness committee. *World Views on Evidence-Based Nursing*, 13(1), 85-88.
- Melnyk, B., Gallagher-Ford, L., Thomas, B., Troseth, M., Wyngarden, K., & Szalacha, L. (2016). A study of chief nurse executives indicates low prioritization of evidence-based practice and shortcomings in hospital performance metrics across the United States. *World Views on Evidence-Based Nursing*, 13(1), 6-14.
- Mollon, D., Fields, W., Gallo, A., Wagener, R., Soucy, J., Gustafson, B., & Kim, S. (2012). Staff practice, attitudes, and knowledge/skills regarding evidence-based practice before and after an educational intervention. *The Journal of Continuing Education in Nursing*, 43(9), 411-419.

- Page-Cuttrara, K. (2014). Use of prebriefing in nursing simulation: A literature review. *Journal of Nursing Education*, 53(3), 136-141. <http://doi.10.3928/01484834-20140211-07>
- Raftopoulos, V., Savva, N., & Papadopoulou, M. (2011). Safety culture in the maternity units: a census survey using the Safety Attitudes Questionnaire. *BMC Health Services Research*, 11(238), 1-10.
- Sammer, C. E., Lykens, K., Singh, K. P., Mains, D. A., & Lackan, N. A. (2010). What is patient safety culture? A review of the literature. *The Journal of Nursing Scholarship*, 42(2), 156-165.
- Sidani, S., Manojlovich, M., Doran, D., Fox, M., Covell, C., Kelly, H., Jeffs, L., & McAllister, M. (2016). Nurses' perceptions of interventions for the management of patient-oriented outcomes: a key factor for evidence-based practice. *Worldviews on Evidence-Based Nursing*, 13(1), 66-74.
- Sinni, S., Wallace, E., & Cross, W. (2014). Perinatal staff perceptions of safety and quality in their service. *BMC Health Services Research*, 14(591).
- Sprayberry L. (2014). Transformation of America's health care system: Implications for direct-care nurses. *MedSurg Nursing*, 23(1), 61-66.
- Stichler, J. (2011). Leading change: one of a leader's most important roles. *Nursing for Women's Health*, 15(2), 166-170.
- Stokke, K., Olsen, N., Espehaug, B., & Nortvedt, M. (2014). Evidence based practice beliefs and implementation among nurses: a cross-sectional study. *BMC Nursing*, 13(8).
- Tagney, J., & Haines, C. (2009). Using evidence-based practice to address gaps in nursing knowledge. *The British Journal of Nursing*, 18(8), 484-489.

- Ven, J., Houterman, S., Steinweg, R., Scherpbier, A., Wijers, W., Mol, B., Oei, S., & the TOSTI-trial group. (2010). Reducing errors in health care: cost-effectiveness of multidisciplinary team training in obstetric emergencies (TOSTI study); a randomized controlled trial. *BMC Pregnancy and Childbirth*, 10(59), 1-6.
- Verklan, M., & Walden, M. (2015). *Core curriculum for neonatal intensive care nursing*. St. Louis, MO: Elsevier.
- Wilkinson, C., (2013). Competency assessment tools for registered nurses: An integrative review. *The Journal of Continuing Education in Nursing*, 44(1), 31-37.
- Wong, P., & Myers, M. (2015). Clinical competence and EBP: an educator's perspective. *Nursing Management*, 46(8), 16-18.
- <http://doi.10.1097/01.NUMA.0000469358.02437.67>.

## Appendix A

### Socio-demographic Assessment

Code # \_\_\_\_\_

1. Age \_\_\_\_\_
2. Gender  
Male \_\_\_\_\_  
Female \_\_\_\_\_
3. Ethnicity  
Caucasian \_\_\_\_\_  
African-American \_\_\_\_\_  
Hispanic \_\_\_\_\_  
Other (please specify) \_\_\_\_\_
4. Education  
I \_\_\_\_\_  
BSN \_\_\_\_\_  
MSN \_\_\_\_\_  
Other (please specify) \_\_\_\_\_
5. Do you hold a specialty certification (RNC-OB, RNC-MNN)  
Yes \_\_\_\_\_ (if yes, which certification do you hold? \_\_\_\_\_)

- No \_\_\_\_\_
6. If you are not certified, are you interested in obtaining specialty certification?  
Yes \_\_\_\_\_  
No \_\_\_\_\_  
Please state your reasons for your interest (or non-interest) \_\_\_\_\_
- 
7. Clinical Practice  
Number of years practicing as RN \_\_\_\_\_
8. Shift typically worked  
7a-7p \_\_\_\_\_  
3-11p \_\_\_\_\_  
7p-7a \_\_\_\_\_  
11p-7a \_\_\_\_\_  
Other \_\_\_\_\_
9. Number of hours typically worked per week  
40 or more \_\_\_\_\_  
32 \_\_\_\_\_  
16 \_\_\_\_\_  
8 \_\_\_\_\_  
Other \_\_\_\_\_

## Appendix B

### Clark Memorial Hospital Labor and Delivery Nurse

My name is Ellee Humphrey and I serve as the Director of the Family Birth Place. As you know, I am pursuing a Doctorate of Nursing Practice at Bellarmine University. I am preparing the capstone project which will complete my degree and I need your help! I am inviting you to participate in the data collection and program development of my project which will focus on implementing an evidence based education program for Labor and Delivery nurses. The educational sessions will be a means of integrating evidence into the care we deliver at the bedside and strengthening our commitment to providing safe, quality patient care.

I am asking you to complete the attached sociodemographic survey and self-assessment. The self-assessment is a modified version of Patricia Benner's novice to expert theory. Please do your best to complete the assessment with honest responses. Your responses to the self-assessment will only be used to plan educational sessions and will ensure your education needs are being met. Providing ongoing education aligns well with our desire to continually improve the quality of care and patient experience at Clark Memorial Hospital.

You will notice, at the top of the self-assessment, there is a place for a code. This will ensure the surveys are blinded and completely anonymous. Once the assessment and demographic surveys have been completed, please put them in the envelope provided, and return them to my office. My office is located on Women's Care on the 4<sup>th</sup> floor.

I appreciate your participation. If you have any questions or concerns, please let me know.

Thank you

Ellee Humphrey MSN, NE-BC

[ellee.humphrey@clarkmemorial.org](mailto:ellee.humphrey@clarkmemorial.org)

[502-380-7870](tel:502-380-7870)

## Appendix C

### Clark Memorial Hospital Physician and Midwife Providers

My name is Ellee Humphrey and I serve as the Director of the Family Birth Place. As you know, I am pursuing a Doctorate of Nursing Practice at Bellarmine University. I am preparing the capstone project which will complete my degree and I need your help! I am inviting you to participate in the data collection and program development of my project which will focus on implementing an evidence based education program for Labor and Delivery nurses. The educational sessions will be a means of integrating evidence into the care we deliver at the bedside and strengthening our commitment to providing safe, quality patient care.

I am asking you to complete the attached sociodemographic survey and pre-intervention needs-assessment. The needs-assessment is a modified version of Patricia Benner's novice to expert theory.

Your responses to the needs-assessment will only be used to plan educational sessions and will ensure Labor and Delivery nurse education needs are being met. Providing ongoing education aligns well with our desire to continually improve the quality of care and patient experience at Clark Memorial Hospital.

You will notice, at the top of the self-assessment, there is a place for a code. This will ensure the surveys are blinded and completely anonymous. Once the assessment and demographic surveys have been completed, please put them in the envelope provided, and return them to my office. My office is located on Women's Care on the 4<sup>th</sup> floor.

I appreciate your participation. If you have any questions or concerns, please let me know.

Thank you

Ellee Humphrey MSN, NE-BC

[ellee.humphrey@clarkmemorial.org](mailto:ellee.humphrey@clarkmemorial.org)

502-380-7870

## Appendix D

### Labor and Delivery Nurses Needs Assessment (providers)

Code \_\_\_\_\_

Directions: This tool will be used to conduct a Labor and Delivery nursing staff needs assessment. As a healthcare provider, you work closely with the nursing staff to provide the very best care to our patients and families. Your input is requested as a means of identifying clinical strengths and areas of opportunity. Listed below are TEN labor and delivery specific topics and/or patient conditions. Please use the modified version of Patricia Benner's novice to expert theory, and associated descriptions, to assign an assessment score, which best describes the nursing care and management of patients in Labor and Delivery. As the needs list is compiled, the results will be used to plan upcoming learning sessions for the Labor and Delivery nursing staff. Thank you for participating.

#### Benner's Novice to Expert

1. Novice: New graduate nurse or nurse without Labor and Delivery experience
2. Advanced Beginner: Efficient and skillful in parts of practice area, requires occasional support; knowledge is developing
3. Competent: Demonstrates efficiency, confident in actions; care completed in timely manner without supportive cues.
4. Proficient: Able to see the big picture; understand the situation as a whole; learns from experience; modifies plan of care based on experience; recognizes when the expected



1. Preeclampsia and patient on Magnesium Sulfate  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
2. Management of shoulder dystocia  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
3. Fetal heart rate interpretation  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
4. Bedside emergencies (abruption, prolapsed cord, crash C/S)  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
5. Maternal hemorrhage  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
6. Newborn transitional vital signs  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
7. Breastfeeding support  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
8. Caring for the patient in triage  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
9. Management of precipitous delivery  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
10. Management of Pitocin for labor  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_

## Appendix E

## Labor and Delivery Nurses Needs Assessment

Code \_\_\_\_\_

Directions: This tool will be used to conduct a self-assessment. Listed below are TEN labor and delivery specific topics and/or patient conditions. Please use the Patricia Benner novice to expert theory, and associated descriptions, to assign a self-assessment score. As the needs list is compiled, the results will be used to plan upcoming learning sessions. Thank you for participating.

## Benner's Novice to Expert

1. Novice: New graduate nurse, or nurse without Labor and Delivery experience
2. Advanced Beginner: Efficient and skillful in parts of practice area, requires occasional support; knowledge is developing
3. Competent: Demonstrate efficiency, confident in actions; care completed in timely manner without supportive cues.
4. Proficient: Able to see the big picture; understand the situation as a whole; learns from experience; modifies plan of care based on experience; recognizes when the expected outcome does not happen; holistic understanding, good decision making skills
5. Expert: Intuitive grasp on each situation, focusing on the problem and solution; deep understanding of the big picture; performance is flexible and of highest proficiency; skilled and analytic.

1. Preeclampsia and patient on Magnesium Sulfate  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
2. Management of shoulder dystocia  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
3. Fetal heart rate interpretation  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
4. Bedside emergencies (abruption, prolapsed cord, crash C/S)  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
5. Maternal hemorrhage  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
6. Newborn transitional vital signs  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
7. Breastfeeding support  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
8. Caring for the patient in triage  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
9. Management of precipitous delivery  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_
10. Management of Pitocin for labor  
Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_

What is your current overall self-rated competency as a Labor and Delivery nurse?

Novice \_\_\_\_\_ Advanced Beginner \_\_\_\_\_ Competent \_\_\_\_\_ Proficient \_\_\_\_\_ Expert \_\_\_\_\_

## Appendix F Labor and Delivery

### Pre Test #1

#### Nursing Management of Patient with Preeclampsia on Magnesium Sulfate

Participant Code \_\_\_\_\_

1. Which of the following is *not* a risk factor for developing preeclampsia?
  - a. Maternal age <19 or >40
  - b. Multiples (twins, triplets, quadruplets)
  - c. Low-Normal Body Mass Index (BMI)
  - d. African descent
  - e. None of the above
2. The automated blood pressure machine is the preferred method for measuring BP?
  - a. True
  - b. False
3. What is the most accurate patient position for measuring BP?
  - a. Lying flat on back
  - b. Left side

- c. Semi-fowlers legs dangling or crossed with arm flat
  - d. Semi-fowlers arm supported at level of heart, legs flat
  - e. None of the above
4. When a patient is started on Magnesium Sulfate, all of the following should be considered *except*:
- a. Obtain a baseline VS assessment which includes O2 saturation, level of consciousness, DTRs, clonus, edema and proteinuria
  - b. Maintain fluid balance not to exceed 125mL/hour
  - c. Intermittent fetal monitoring
  - d. Insert foley catheter with urometer
  - e. None of the above
5. Physiologic changes which can occur with preeclampsia include:
- a. Decreased uteroplacental perfusion
  - b. Left upper quadrant pain
  - c. Hyporeflexia
  - d. All of the above
  - e. None of the above
6. A sign of magnesium toxicity is:
- a. Slurred speech
  - b. Hyperreflexia
  - c. Tachypnea
  - d. Increased BP
7. Calcium gluconate is the antidote for magnesium toxicity
- a. True
  - b. False
8. Common warning signs of eclampsia include:
- a. Persistent headache
  - b. Blurry vision
  - c. Right upper quadrant pain
  - d. All of the above
  - e. None of the above

## Appendix G

### Self-Study Module

#### Preeclampsia and the Management of a Patient on Magnesium Sulfate

Hypertension can complicate 5-10% of all pregnancies and hypertensive disorders are a primary concern in maternal and neonatal morbidity and mortality. Adverse maternal outcomes can include placental abruption, seizures, stroke, organ failure and death. It is estimated that preeclampsia/eclampsia accounts for 10-15% of maternal deaths worldwide. Neonatal adverse outcomes often include decreased uteroplacental perfusion, intrauterine growth restriction, preterm delivery, admission to NICU and fetal demise.

It is important to understand the definition of HYPERTENSION.

Hypertension is defined as systolic blood pressure  $\geq 140$  mm Hg or  $\geq 90$  mm Hg diastolic.

Gestational hypertension occurs in patients  $\geq 20$  w0d with previously normal blood pressure. Gestational hypertension is usually resolved by 12 weeks postpartum.

Chronic hypertension is present prior to pregnancy or is identified before 20 weeks gestation. Chronic hypertension typically lasts longer than 12 weeks postpartum.

It is equally important to understand PREECLAMPSIA.

Several risk factors have been identified for developing preeclampsia. These include: primiparity, maternal age <19 or > 40, multiparity, African descent and preexisting conditions such as chronic hypertension, renal disease, diabetes, obesity and thrombophilias.

PREECLAMPSIA is defined as gestational hypertension **AND** proteinuria ( $\geq .3\text{g}$  of protein in 24 hour urine collection; 1+ dipstick only if 24 hour specimen is not available) **OR** in the absence of proteinuria, preeclampsia is defined as gestational hypertension with **ANY** of the following: thrombocytopenia (platelet count < 100k), renal insufficiency, impaired liver tests, pulmonary edema, visual or cerebral symptoms (scotoma, double vision; hyperreflexia, clonus or seizure activity).

SEVERE HYPERTENSION is defined as systolic blood pressure  $\geq 160\text{mm Hg}$  or diastolic blood pressure  $\geq 100\text{mm Hg}$  on two occasions at least six hours apart (while patient on bedrest). Blood pressure this elevated increases the patient's risk for placental abruption and stroke. These values should be communicated to the physician immediately.

Nursing assessment of the patient with preeclampsia is a critical component to the care that is delivered. The nursing assessment often begins by taking maternal vital signs. When taking the patient's blood pressure, the preferred method is to use the mercury sphygmomanometer. When using the automated blood pressure machine, the systolic and diastolic values can be understated with a variance as much as 10mg of Hg. When assessing a patient's blood pressure, it is ideal for the patient to be sitting or in a semi-reclining position with back support and her arm resting at the level of the heart. Her legs should be uncrossed and flat, not dangling from the bed or exam table. The patient should be quiet for approximately 5 minutes prior to assessment.

Other components of the nursing assessment should include edema, auscultating lung sounds, DTRs and clonus. It would also be important to note if the patient is experiencing a headache, heartburn/epigastric pain or right upper quadrant pain. Fetal assessment is also an important piece of the initial assessment and patients should be monitored according to hospital policy.

When the patient is diagnosed with preeclampsia and started on Magnesium Sulfate, the nurse should record a baseline assessment of vital signs (O2 sat, LOC, DTRs, clonus, edema and proteinuria) and continue this assessment per hospital policy. A foley catheter should be inserted and a urometer should be used to measure output. Magnesium Sulfate is excreted through the kidneys, and the patient can quickly become toxic when renal function is compromised. Accurate I&O is essential to the management of patients on magnesium sulfate. Finally, the patient should be placed on continuous fetal monitoring and this assessment should also be documented per hospital policy.

Preeclampsia is classified as a disease which disrupts the pathophysiology of the placenta. One of the primary concerns is decreased placental perfusion which can lead to growth restriction, decreased amniotic fluid, preterm delivery, poor intrauterine fetal oxygenation, and abruption. Magnesium Sulfate crosses the placenta and babies born to mothers on Magnesium are often lethargic, have poor tone and could demonstrate signs of respiratory depression. The delivery nurses should be prepared to manage these infants, to include resuscitation.

These patients can also experience central nervous system disturbances which manifest as headaches, hyperreflexia and clonus or seizures (eclampsia). Patients may also experience right upper quadrant pain due to elevated liver enzymes and poor hepatic blood flow.

All patients on Magnesium Sulfate should be monitored for signs/symptoms of toxicity. These can include drowsiness, lethargy, overall weakness, slurred speech, decreased reflexes, respiratory depression and cardiac arrest. A magnesium level of 4-7mEq/liter is considered therapeutic. As magnesium levels increase, the signs and symptoms of toxicity worsen. Calcium Gluconate is the antidote for Magnesium

Toxicity. If toxicity is suspected, notify the physician, obtain lab results and administer Calcium Gluconate as ordered.

Eclampsia is defined as the presence of seizures in a woman diagnosed with preeclampsia. Fifty percent (50%) of eclamptic seizures occur in the antepartum period. While seizures can develop without warning, there are a few noteworthy signs/symptoms the patient may demonstrate prior to seizing. The patient might complain of a persistent headache, blurry vision or visual disturbances (double vision) and epigastric or right upper quadrant pain. When the patient has a seizure, it is most important to remain at the bedside and call for help. Note the time and duration of the seizure activity. Notify the physician and anesthesia. Be prepared to suction secretions from the mouth to keep the airway clear. If the patient is already on Magnesium Sulfate, continue the infusion until any new orders are received from the physician. If the patient is not on Magnesium Sulfate, be prepared to initiate therapy. Remember, Magnesium Sulfate is a HIGH RISK/HIGH ALERT medication and both the bolus and maintenance doses should be verified by a 2<sup>nd</sup> RN at the time of infusion. Maintain fetal monitoring and anticipate the need for intrauterine resuscitation or immediate delivery.

## Appendix H

### Pre-Test #2

#### Shoulder Dystocia      Code \_\_\_\_\_

1. Shoulder dystocia can be defined as all of the following except:
  - a. A delivery requiring additional maneuvers when gentle downward traction on the fetal head fails to deliver the shoulders.
  - b. The impaction of the posterior fetal shoulder behind the maternal tailbone.
  - c. Retraction of the fetal head against the maternal perineum.
  - d. An obstetric emergency caused by a disruption in the mechanisms of labor specific to fetal internal rotation.
2. All of the following are potential risk factors for shoulder dystocia except:
  - a. Induction of labor
  - b. Prolonged 2<sup>nd</sup> stage of labor
  - c. Uncontrolled diabetes
  - d. History of shoulder dystocia
  - e. BMI of 20.0
3. In infants with macrosomia, the fetal head is the largest part of the body to pass through the birth canal.

- a. True
  - b. False
4. When a shoulder dystocia is identified, all of the following maneuvers could be applicable except:
  - a. McRobert's
  - b. Woodscrew
  - c. Fundal pressure
  - d. Zavanelli
  - e. Episiotomy
5. It is recommended that suprapubic pressure should be applied for no longer than:
  - a. 30 seconds
  - b. 1 minute
  - c. 10 seconds
  - d. Time of suprapubic pressure is insignificant
6. The delivery room personnel have between 4-6 minutes to resolve the dystocia before fetal neurologic injury is present.
  - a. True
  - b. False
7. When documenting a shoulder dystocia, it is important to note:
  - a. Time of delivery of fetal head and time of delivery of shoulders
  - b. Maneuvers done to resolve dystocia
  - c. Condition of infant at delivery
  - d. Which shoulder is anterior and which is posterior
  - e. None of the above
  - f. All of the above
8. Maternal complications can include all of the following except:
  - a. Hemorrhage
  - b. Uterine rupture
  - c. 3<sup>rd</sup> or 4<sup>th</sup> degree episiotomy
  - d. Inability to breastfeed
9. A common harm to the neonate following shoulder dystocia is brachial plexus injury.
  - a. True
  - b. False
10. Forceps or vacuum deliveries have been associated with a higher incidence of shoulder dystocia.
  - a. True
  - b. False

## Appendix I

### Labor and Delivery

#### Pre-Test #3

#### Newborn Transitional Vital Signs

Code \_\_\_\_\_

1. Newborn vital signs should be assessed
  - a. Every hour after delivery
  - b. Every 15 minutes after delivery
  - c. Every 30 minutes after delivery
  - d. Every shift
2. After birth, newborn temperature regulation is affected by internal physiologic processes and the external environment.
  - a. True
  - b. False
3. Skin to skin contact is often used to treat mild hypothermia
  - a. True
  - b. False
4. Benefits of skin to skin contact include all of the following except:
  - a. Normalize infant temperature
  - b. Normalize other vital signs
  - c. Decreases infant blood sugar

- d. More successful breastfeeding
  - e. None of the above
5. When using a radiant warmer, it is important to place a hat on the infant
- a. True
  - b. False
6. Which of the following is an abnormal finding during the newborn transition period:
- a. Transient tachypnea
  - b. Acrocyanosis
  - c. Heart rate between 120-180 beats/minute
  - d. Axillary temperature 96.8
  - e. None of the above
  - f. All of the above
7. Symptoms of hypoglycemia include all of the following except:
- a. Lethargy
  - b. Tachypnea
  - c. Poor feeding
  - d. Jitteriness
  - e. All of the above
8. Normal axillary temperature in the term neonate is 97.7-99.4
- a. True
  - b. False
9. Vitamin K and E-mycin should be administered within 1 hour of birth regardless of type of delivery
- a. True
  - b. False
10. Risk factors for blood sugar instability include:
- a. Temperature instability
  - b. Impaired oxygenation
  - c. IUGR or macrosomia
  - d. Prematurity
  - e. Maternal diabetes
  - f. None of the above
  - g. All of the above

## Appendix J

## Peer to Peer Validation of Newborn Transitional Vital Signs

Patient Sticker	Type of Delivery Date/Time	Gestational Age	Resources Provided by NBN Nurse	Vital Signs WNL Yes or No	Intervention if Vital Signs NOT WNL

Labor and Delivery RN \_\_\_\_\_

Nursery RN \_\_\_\_\_



## Appendix K

## Labor and Delivery

## Pre-Test #4

## Massive Obstetric Hemorrhage

Code \_\_\_\_\_

1. Blood loss totaling > 1000mL for a vaginal delivery or cesarean section is indicative of a hemorrhage and warrants careful assessment of deteriorating condition.
  - a. True \_\_\_\_\_
  - b. False \_\_\_\_\_
2. Vital signs changes are not typically seen in healthy women until volume of blood loss exceeds 1000mL.
  - a. True \_\_\_\_\_
  - b. False \_\_\_\_\_
3. Match the volume of blood loss with the physiologic changes you would expect to occur:

Volume of Blood Loss	Physiologic Changes
(a) 1000mL	(1) Narrowed pulse pressure, heart rate over 100, respiratory rate 20-30, diaphoretic, weak, urine output 20-30 mL/hr
(b) 1500mL	(2) Profound hypotension, heart rate over 140, respiratory rate over 40, slight urine output or anuria
(c) 2000mL	(3) Slight change in blood pressure, heart rate normal, palpitations, respiratory rate normal, dizziness, normal urine output
(d) >2500mL	(4) Hypotension, narrowed pulse pressure, heart rate over 120, respiratory rate 30-40, pale, extremities cool, restlessness, urine output 5-15 mL/hr

4. As a nurse caring for a patient in labor, you should be cognizant of which of the following risks which could increase the risk for hemorrhage?
  - a. Chorioamnionitis
  - b. Placenta previa
  - c. Multiple gestation
  - d. Prior uterine surgery
  - e. None of the above
  - f. All of the above
5. Examples of uterotonic medications include:
  - a. Methergine
  - b. Hemabate
  - c. Nifedipine
  - d. A&B
  - e. None of the above
  - f. All of the above
6. Oxytocin is the preferred medication for the prevention and treatment of postpartum hemorrhage?
  - a. True \_\_\_\_\_

- b. False \_\_\_\_\_
7. All of the following are acceptable means of quantifying blood loss except:
- a. Visual determination
  - b. Under-buttocks drapes
  - c. Weighing blood soaked materials
  - d. None of the above
  - e. All of the above
8. When implementing hemorrhage guidelines, it is necessary to have:
- a. A multi-disciplinary, collaborative approach
  - b. Common language to describe a maternal hemorrhage
  - c. Evidence based guidelines
  - d. Improved communication and teamwork
  - e. All of the above
  - f. None of the above
9. All pregnancies are at risk for hemorrhage
- a. True \_\_\_\_\_
  - b. False \_\_\_\_\_
10. Changes in lab values, such as HCT or HgB, are often recognized at around 4 hours post blood loss, making them not the best determinants for blood loss when managing a hemorrhage in the early stage.
- a. True \_\_\_\_\_
  - b. False \_\_\_\_\_

## Appendix L

## Pre-Test #5

## Bedside Emergencies

Code \_\_\_\_\_

1. Placental abruption is defined as:
  - a. Low-lying placenta covering all or part of the cervix
  - b. Premature separation of the placenta from the wall of the uterus
  - c. Growth of the placenta and other blood vessels deep into the uterine wall
  - d. None of the above
2. Which of the following is a risk factor for placental abruption:
  - a. Polyhydramnios
  - b. PPROM
  - c. Chorioamnionitis
  - d. Preeclampsia
  - e. All of the above
  - f. None of the above
3. Risk factors for umbilical cord prolapse include all of the following except:
  - a. Placement of cervical ripening balloon catheter
  - b. Use of Pitocin
  - c. PPROM
  - d. Polyhydramnios
  - e. None of the above
4. Cord prolapse can lead to fetal hypoxia:
  - a. True \_\_\_\_\_
  - b. False \_\_\_\_\_
5. Once a cord prolapse has been identified, the FIRST step is to:
  - a. Put patient in knee chest
  - b. Place the patient in Trendelenburg
  - c. Elevate the presenting part off of the cord
  - d. Rush the patient for emergency Cesarean delivery
6. Typical indications for emergency Cesarean delivery include all of the following except:
  - a. Maternal request
  - b. Prolonged fetal bradycardia
  - c. Cord prolapse
  - d. Hemorrhage
  - e. Cardiac arrest
7. In the event of an emergent Cesarean delivery, a time out is warranted?
  - a. True \_\_\_\_\_
  - b. False \_\_\_\_\_
8. Match the fetal heart rate category with the interpretation and features:

Category	Interpretation and Features
I (Normal)	Minimal variability Absent variability without recurrent late decelerations Marked variability Prolonged deceleration Not predictive of normal acid-base status
II (Intermediate)	Strongly predictive of normal acid-base status

	Baseline 110-160 Late or variable decelerations are absent Early decelerations can be present or absent
III (Abnormal)	Absent variability and recurrent late decelerations; bradycardia; recurrent variable decelerations; tracing is predictive of abnormal acid-base status at time of observation

## Appendix M

## Case Study

## Labor and Delivery Module 5

## Bedside Emergencies

Code \_\_\_\_\_

Please read the following case study. In the space provided, write your clinical response. This can include, but is not limited to your clinical interventions, physician notification, maternal and fetal assessment and documentation.

Mrs. Smith is a 32 year old G1P0 at 40 weeks gestation. She is a teacher in the Clark County school system and has been married to her husband for 7 years. She is being sent from the OB office for induction for elevated blood pressure and edema.

Her prenatal history is significant for two recent triage visits with complaints of mild headache. Her blood pressures in triage were 130/80 and 140/82. Her urine was trace-1+ protein. She is O+ non-reactive and immune and she is GBS-. HepB and HIV are both negative.

Today, upon admission to labor and delivery, her blood pressure is 148/96, her vaginal exam is 2/50/0 and her BOW is intact. You place the external fetal monitors and review the orders to begin Magnesium Sulfate and Pitocin. You start her IV and draw admission labs. The fetal heart rate tracing is Category I, baseline 135bpm.

You prepare to start the Magnesium Sulfate by getting another nurse to verify the pump settings. The orders are for a 4gm bolus and maintenance rate of 2gm/hour. The bolus has infused. You ask the 2<sup>nd</sup> nurse to return to the bedside with you so that you can verify pump settings for the dose change to 2gm/hr.

You have also been given orders to start Pitocin at 2miliunits increase by 2miliunits every 30 minutes until adequate contractions. Mrs. Smith begins to complain of a headache. Your clinical assessment for all patients on Magnesium Sulfate should include (please list 4 components of your assessment; there will be more, but please list 4)

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

Mrs. Smith is beginning to get uncomfortable and she is requesting an epidural. Your vaginal exam determines she is 4-5/100/-1. You notify anesthesia and begin prepping her for the epidural. Once the epidural is placed, you reposition Mrs. Smith in the bed and adjust her fetal monitors. You begin to notice late decelerations post epidural placement. You could attribute this to:

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How would you correct the late decelerations? (there could be more than 4, but list 4)

- 1.
- 2.
- 3.
- 4.

Now you notice a decrease in variability on the fetal tracing and you notice repetitive late decelerations. You notice the patient has some bloody show and you perform a vaginal exam. The patient is 6/100/-1. She is still intact.

You return to Mrs. Smith's room because you notice variable decelerations on the fetal tracing. What corrective actions would you take to resolve the variables?

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

You perform another vaginal exam and she ruptures while you're doing the exam. She is found to be 8/100 the fluid is blood tinged and you feel a cord. Now what?

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The baby is delivered, apgars 8/9. Mrs. Smith goes to the recovery room and will remain in L/D for 24 hours on 2gm/hr Magnesium Sulfate.

## Appendix N

July 3, 2016

Dr. Ta’Neka Lindsay

Nursing Department, Bellarmine University

IRB #514, “Implementing and Evaluating an Evidence-Based Education Program for Labor and Delivery in a Community Hospital Setting”

Dr. Cain;

The IRB has received your application for the project entitled “*Implementing and Evaluating an Evidence-Based Education Program for Labor and Delivery in a Community Hospital Setting*”. The project has been designated protocol #514. Your project is exempt and as always the IRB expects full compliance with relevant policies and procedures inclusive of informed consent. If any issues emerge that may alter the protocol and/or an adverse event occurs, you are required to contact the IRB chair as soon as possible.

If you have any questions, please feel free to contact me. As always, we wish you the best with your project.

Regards,

Joseph Sinski

Vice-Chair, Bellarmine University Institutional Review Board

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Dr. Joseph Sinski  
Professor of Chemistry  
Vice-Chair, Bellarmine IRB  
Bellarmine University  
502-272-8219

## Appendix O

**Labor and Delivery Nurse Annual Competency Evaluation****Name:** \_\_\_\_\_**Date:** \_\_\_\_\_

Competency Station	Satisfactory	Unsatisfactory	Follow Up (Date/time, type of follow up, who provided follow up)	Follow Up Outcome
Fetal heart rate interpretation				
Newborn transitional vital signs				
Demonstrate an assessment of a patient with preeclampsia on Magnesium Sulfate				
Participation in shoulder dystocia drill				



Participation in emergency C/S drill				
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Table 4

*Levels of Evidence Grading Using AACN's Evidence-Leveling System*

Author/Year	Purpose	Instrument	Sample	Results	Conclusions	Limitations	Notes	Level of Evidence
Al Wattar, B., Tamblyn, J., Parry-Smith, W., Prior, M., & Van Der Nelson, H. (2017).	Assess the current practice of managing postpartum hemorrhage (PPH) in the UK	Standardized data collection tool; prospective design	98 obstetrics units; 3663 cases of primary postpartum hemorrhage	50% of the hemorrhage cases were minor, 25% moderate and 25% severe; majority of women received active management of the 3 <sup>rd</sup> stage of labor, uterotonic agents were used; poor consult from OB and anesthesia when managing PPH	Variations in managing PPH in the UK; management against national guidelines; more senior doctor involvement and evaluation of practice will be needed to improve maternal outcomes after PPH	Lack of funding to continue quality assessment; small number of cases were missing data and had to be excluded; did not collect data on patients who did not have PPH; therefore no control medium; patient selection bias; 3	Evidence based management of PPH; high level awareness of preventing PPH; need more senior doctor involvement and standardized management of 3 <sup>rd</sup> stage of labor.	B

						regions of UK not included in study.		
American College of Obstetricians and Gynecologists. (2017).	To introduce standard, evidence based guidelines for the management of patients with preeclampsia and eclampsia.	Non-research; committee opinion	No sample	Evidence based treatment recommendation for patients with severe hypertension	Information contained in committee opinion is not meant to be comprehensive	N/A	Evidence based treatment plan; examples of order sets and medication management	D
American College of Obstetricians and Gynecologists. (2014).	Tools to manage emergency in the inpatient setting	Non-research; committee opinion	No sample	Tools to manage clinical emergencies	Managing emergencies takes planning, it is a team effort that may prevent or reduce the incidence of OB emergencies	N/A	Emergency supplies; rapid response team; protocol development; standardized communication; simulation drills are all tools to aide in the management	D

							of emergencies	
American College of Obstetricians and Gynecologists. (2006).	Manage post partum hemorrhage	Non-research, practice bulletin	No sample; non research	Management of post partum hemorrhage discussed; evidence based care	Maternal morbidity and mortality may follow hemorrhage; OB units need to be prepared to manage hemorrhage; simulation drills, team training; review the etiology and management of hemorrhage	N/A	Preparation to evaluate and manage hemorrhage; evidence based care and guidelines; focus on teamwork, team training and simulation drills	D
American College of Obstetricians and Gynecologists. (2002).	Shoulder dystocia	Non research; practice bulletin	No sample, non research	Provides clinicians with evidence regarding deliveries at risk for or complicated by shoulder dystocia	Cannot predict shoulder dystocia; risk factors, maternal history. Guidance on the management of this complication	N/A	Evidence based guidelines for providers; used in the content development for capstone pre/post tests	D
Auguste, T., Goffman, D., Deering, S., Pliego, J., Andreatta, P.,	Discuss utilization of simulation training in	Non-research	No sample	Discussed the origin of team training; essential components of	Simulation training is beneficial to the clinical team; aides in	Adding to body of evidence	Simulation training is well supported by professional	E

Erickson, L., & Daniels, K. (2012).	obstetric emergencies			team training; how to develop a simulation scenario; implementing a simulation program	learning; leadership support is essential for successful simulation training; full team participation is essential, environment must be conducive to learning		agencies; information on support of team training and how to implement team training program	
Balakas, K., Sparks, L., Steurer, L., & Bryant, T. (2013)	To describe perspectives and factors related to the incorporation of evidence for clinical decision making by nurses who completed the Evidence Based Scholars program.	Focus group design; interview questionnaire was used; interviews were tape recorded; interpretive phenomenological design	20 nurses who had completed the Evidence Based Scholars program during the previous 6-36 months, currently employed as staff nurses	Expressed appreciation for program; themes included re-igniting passion for nursing, strengthening relationships, autonomy through empowerment, supporting the institution; factors to facilitate use of evidence were identified; participants	Nurses who participated in the scholars program incorporated evidence into practice; four themes present throughout all of the focus groups; barriers to implementing evidence based practice were identified	Small sample size and limited number of participants in the scholars program; pilot program	Incorporating evidence into practice leads to better patient outcomes; four themes throughout; leader involvement is necessary for successful integration	C

				were able to describe how they would use evidence in clinical situations				
Bell, R., Bossier-Bearden, M., Henry, A., & Kirksey, K. (2015)	Implement a nursing fellowship to facilitate successful transition and retention of experienced nurses into the specialty of obstetrics.	Development of fellowship program; didactic; clinical experience with preceptor; buddy program; independent patient care assignment	4 nurses were recruited, interviewed and met criteria to participate in fellowship	All four nurses were successfully onboarded, reducing the vacancy rate on the unit by 7.7%	Program can be replicated in different service lines and in different hospitals; fellows onboarded successfully and deemed competent	Small sample size, pilot program, specialty nursing	Positive feedback from fellows and preceptors. Significant reduction in vacancy rate; AWHONN standards used to enhance and augment program	B
Benner, P. (1982)	Novice to expert; development of knowledge	Seminal work, non-research	N/A	Description of the 5 levels of nursing experience	Theory regarding skill development over time	Nursing theory but could be applied to other disciplines	5 levels of nursing; skill development; knowledge development	E
Benner, P. (2001)	Novice to expert; skill and knowledge development	Adding to the body of evidence in support of seminal work	N/A	Description of the 5 levels of nursing experience	Theory regarding skill development over time	Nursing theory but could be applied to other disciplines	5 levels of nursing; skill development; knowledge development	E

Bridges, R., Herrin, D., Swart, T., & McConnell, M. (2014).	To create innovative educational structures	Variety of educational methods to meet the needs of the generations represented among the staff on the unit	Staff in a new progressive care unit	“Teach Me Tuesday” was developed to enhance patient safety and information sharing; Cardiac Construction 101 was a formal class for novice nurses; “Third Thursday” courses were discussions of case studies	Program evaluation of Cardiac Construction 101 included comments detailing increased confidence and better understanding of managing critical cardiac events; novice nurses moved into teaching roles; more than 50% of “Teach Me Tuesday” were presented by novice nurses with expert preceptor; organization staff satisfaction surveys confirmed success of program	Small sample size; one unit in hospital participated	Must give consideration to generational and individual learning differences; innovative education modalities; novice nurses felt supported by the program and with the opportunity to advance skills	C
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Burke, C., Grobman, W., & Miller, D. (2013).	Process standardization, protocol development, team training, improving communication; program “Maintaining the Culture of Safety” was developed to align the multidisciplinary team.	Development of program which lead to protocol development; simulation sessions, debriefing sessions and evaluation form completed after each session; prior safety questionnaire	More than 370 members of the healthcare team, to include OBs, midwives, anesthesia team and nurses	97% rated the program as excellent; response to question about the overall grade of patient safety measured by AHRQ demonstrated significant improvement in the score following the program (p=.003)	Discussion, simulation, effective communication aided in teamwork; protocols were clarified; focus on accurate and timely communication; high reliability	None identified by authors	Large university hospital setting; shoulder dystocia, operative vaginal delivery, hemorrhage and fetal monitoring interpretation were subjects of simulation; debriefing process utilized; program rated as excellent by 97% of participants	B
Byrd, F., Burns, B., & Grossklags, B. (2012)	To determine if NCC certified nurses could appropriately self-assess areas of strengths	Survey to determine self-assessment; one of three forms of a 100 item test were	Sample 1: 487; Sample 2: 485; Sample 3: 476; participants were selected in	Pearson product moment correlation coefficients calculated using three separate self-assessment ratings and the four test scores	Based on the overall findings, the development of a Continuing Competency Initiative was approved by the NCC Board of	Pilot project; adding to existing body of literature referencing other studies	Developed a 100 item test instrument; based on study findings, process within NCC will be	B

	and weaknesses related to competencies for the specific certification, and to determine if the accuracy of the self-assessments varied across subgroups of the specialty	administered	three random samples from NCC certified WHNP.	(total, GYN, OB and primary care). Findings did not support self ratings as an accurate method of knowledge assessment within this population. A means of directly measuring knowledge was recommended. Participants in all samples were found to be more accurate in self assessing their weaknesses in GYN, OB than they were in primary care.	Directors aimed at transitioning from a self assessed model and self selected continuing education model to a new formal.		changed to a continuing competency initiative for certification maintenance.	
Calvert, K., McGurgan, P., Debenham, E., Gratwick, F., & Maouris, P. (2013).	To identify the evidence base for clinical impact of simulation training in	Literature review; 887 in initial search; filtered to include 92 articles	92 articles were included in the review	Evidence for the following clinical situations: eclampsia, shoulder dystocia, post	Evidence exists for positive impact of training in OB emergencies; majority of evidence	Adding to the existing body of literature, lack of local experts to	Simulation training is beneficial to OB clinicians; concern for the	C

	obstetric emergencies and to address some concerns regarding appropriate delivery of emergency training in Australia.			partum hemorrhage, maternal collapse, cord prolapse and team training. Evidence supports knowledge and skills gained from simulation training and demonstrates the benefit of team training in small units without access to high fidelity simulation equipment	applies to evaluation of participant's confidence, knowledge and skill rather than the level of impact on clinical outcomes; simulation training is appropriate for this particular setting	provide the simulation training; local resource issues such as lack of high fidelity simulators	Australian setting given the smaller units, remote from tertiary resources; effective training can be delivered to smaller units with fewer resources and at a low cost; current evidence supports simulation training and its impact on confidence, knowledge and skills but minimal evidence on impact of training on maternal and neonatal morbidity and mortality	
Calzone, K., Jenkins, J.,	To assess practicing	Convenience sample;	239 RNs ages 22-72	Perceived genomic	Findings of the study can lead	Pilot study; participants	Process to understand	C

Yates, J., Cusack, G., Wallen, G., Liewehr, D., Steinberg, S., & McBride, C. (2012).	nurse attitudes, practices, receptivity, confidence and competency of integrating genomics into nursing practice	cross sectional study; completed an on line survey that assessed domains of Roger's Diffusion of Innovation s theory and used family history utilization for competency assessment	years; median years in practice 20; overall response rate of 28%	competency was inadequate, family history not used in care delivery; most nurses indicated interest in continuing education in genomics	to development of targeted education to prepare for the ongoing genetics and genomics information and targeted therapies in healthcare; pilot study serves as foundation for next step which is a national nursing workforce study	commented survey was too long	nurse perception of importance of genomics in delivery of clinical care	
Chappell, K., & Koithan, M. (2012).	To discuss building a skills based competency course	Non-research	N/A	Skills based competency development is similar to building continuing education; attention to content development, content delivery	Deliver educational content necessary to teach a skill or skill set; evaluate ability to perform skill; demonstrate successful completion of course and	Opinion based article; contributes to existing literature by adding perspective	Skills based programs evaluate if participant can demonstrate knowledge, skills and professional behaviors in a simulated	E

				and evaluation are essential	ability to apply skill set		or clinical environment	
Cortet, M., Maucourt- Boulch, D., Deneux- Tharaux, C., Dupont, C., Rudigoz, R., Roy, P., & Huissoud, C. (2014).	To identify women at risk for severe post partum hemorrhage by building a prediction model based on clinical variables available at the time of hemorrhage diagnosis	Cluster- randomized controlled trial; maternity units were randomized into two groups; one group received guidelines for hemorrhage manageme nt and the other group received outreach visits to discuss protocols and review severe hemorrhage .	Population based cohort of all women diagnosed with post partum hemorrhag e who delivered in 106 French maternity units between Dec 2004- Nov 2006. 9365 cases of post partum hemorrhag e among 146,876 deliveries; cesarean deliveries and those less than 32 weeks were excluded	Prevalence of severe hemorrhage was 18.5%. Clinical variables associated with hemorrhage included parity, multiple pregnancy, labor induction and instrumented delivery.	Cannot predict severe hemorrhage; every patient with hemorrhage should receive most optimal management; laboratory data needed and recommended.	Did not consider all women with hemorrhag e at risk for severe; first study aimed at building prediction model	Prediction model that was built was not found to be good enough to use in everyday practice; clinical data available at the time of hemorrhage are not able to predict progression to severe hemorrhage; care should remain vigilant and follow guidelines	B

Cutrara, K. (2014)	Literature review of available evidence focused on prebriefing a simulation scenario	Non-research; contributing to existing body of work	15 articles met inclusion criteria for review	Learning rather than evaluation was focus of simulation experience; prebriefing sets stage for simulation based learning; all articles embraced the nonpunitive approach; use prebriefing time so participants can ask questions	Prebriefing refines ability to notice aspects of the clinical scenario, anticipate need and focus on existing knowledge; prebriefing is reflected by the use of multiple terms	Only 1 study specifically focused on prebriefing; partial information provided on prior simulation experience and the nature of prebriefs may have impacted the interpretation of how prebriefing relates to outcomes.	Existing literature discusses prebriefing, but uses multiple terms; research needed to develop prebriefing so that it focuses on application of existing knowledge to meet objectives of simulation; prebriefing has potential to enrich simulation experience	C
Danielsson, M., Nilsen, P., Ohrn, A., Rutberg, H., Fock, J., & Carlford, S. (2014).	To explore subcultures among nurses and nurse assistants in Sweden in terms of their	Exploratory design, qualitative research; focus group interviews and individual interviews;	28 nurses and 24 nurse assistants; participants should be employed for six months and	Seven patient safety culture domains were found (responsibility, competence, cooperation, communication, work	Nurses and assistants in Sweden differ with regard to assumptions, values and norms which impact patient safety; routines,	Voluntary participation in sample could mean the sample differs from the broader population	The results of this study could be used to start patient safety discussion between different	C

	assumptions , values and norms with regards to patient safety	manifest content analysis	work 20 hours/week or more	environment, management and routines; these corresponded with three system levels (individual, interpersonal and organizational levels); organizations are not characterized by a single dominant culture; culture of safety is a complex concept	managers who adhere to rules and health work environments were valued; communication about errors was considered important; in order to improve patient safety culture, tailor efforts to nurses and assistants assumptions regarding patient safety, values and norms.	of nurses and assistants; qualitative research is limited regarding relevance and generalizability; two of the focus groups had only two participants	professional groups	
Decker, S., Utterback, V., Thomas, M., Mitchell, M., & Sportsman, S. (2011).	To discuss aspects of competency evaluation and propose simulation as an effective strategy	Non-research, review of literature; discusses the use of the Nursing Global Continued Competency Evaluation	Original studies referenced in review	Reliable instruments needed to evaluate competence; research done to evaluate use of simulation to validate procedure specific competencies;	Simulation has the potential to be used to validate critical thinking and continued competency; however, use of simulation to validate competency cannot be	Gaps in evidence exist regarding effective ways to measure continued competence using simulation	Simulation mirrors real life situation; continued competency evaluation can be accomplished if simulation strategy is adopted	D

		model to measure continued competence		research needed to determine predictive validity of simulation when determining competency	successful until educators acquire skills and knowledge to use this strategy			
Druzin, M., Shields, L., Peterson, N., & Cape, V. (2013)	Toolkit to provide resources to manage preeclampsia	Non-research; toolkit	No sample, toolkit to provide guidance in managing preeclampsia	Evidence based treatment modalities, algorithms and education aimed at improving maternity care	Multi-faceted approach to management of preeclampsia	None noted	Toolkit includes algorithms to diagnose and treat preeclampsia, discusses nursing assessment and interventions, care for the patient, risk factors and associated morbidity and mortality	D
Edhi, M., Aslam, H., Naqvi, Z., & Hashmi, H. (2013)	To evaluate the most common etiology of post partum hemorrhage in a tertiary	Cross sectional study	Review of 1,493 deliveries; 26 cases of post partum hemorrhage	Primary post partum hemorrhage was the most common and attributed to uterine atony; secondary	Existing practices to manage post partum hemorrhage are highlighted; morbidity and mortality	Cross sectional study captured small population which may not	No evidence based management guidelines in place; hysterectomy is most common	C



	care center in Pakistan			hemorrhage most commonly caused by retained products of conception; hysterectomy found to be most common management of post partum hemorrhage.	associated with hemorrhage can be prevented by critical judgement, and early intervention; introducing an evidence based management model could reduce the practice variations and improve care to women with hemorrhage	represent the entire city; hospital setting is for those affluent patients which does not represent entire city; need to do broader study to capture data needed to reduce morbidity and mortality	management of hemorrhage	
Fero, L., Witsberger, C., Wesmiller, S., Zullo, T., & Hoffman, L. (2009)	Explore the power implications of implementing competency based assessments; identifies strategies to	Non-research; contributing to existing body of work	The original study (1999) included nurse managers who administer competency based	Original study named 3 reasons for the introduction of competency based assessment by nurse leaders; control and monitor work practices;	Competency based assessment could be used by leadership as a means of controlling practice and disempowering nursing staff, instead of a	Adding to existing body of literature; referencing study from 1999; generalized nursing, not specific	Development of competency based assessment not discussed; could be of detriment if not implemented	D

	be used by nursing management when creating and implementing effective and fair competency based assessments for nursing		policies; those who conduct the competency based assessments and those being assessed	manage work performance issues, and to create a learning environment	means of developing practice; leadership is critical in creating a positive work environment; staff morale could be jeopardized if competency based assessment not implemented well	to specialty nursing	well; implications for nurse leaders could include disengaged nursing workforce	
Highfield, M., Scharf-Swaller, C., & Chu, L. (2016).	To determine whether a day of nurse led lecture plus low fidelity simulation would increase nurse self assessed knowledge and confidence in managing five high	Nursing Management of OB/Perinatal Complications & Emergencies (NursOB) scale. Pre/post test design	67 labor and postpartum nurses before and after simulation day training	Preliminary results supported validity and reliability of NursOB scale; but nurse knowledge and confidence did not improve after simulation. Gained practical knowledge of simulation training and nurse interest in	Project contributes simulation outcome measurement tool as well as practical knowledge of how to facilitate simulation education and evaluate outcomes	Small convenience sample, results are not generalizable; subjective self-report to measure learner outcomes; variations in the way the simulation days were	Knowledge gained about simulations; RN self reports roughly matched observation of their performance	D

	risk OB situations.			competency was piqued.		conducted; videotaping was interrupted by technical difficulties		
Ironside, P. (2008).	To ensure patient safety, discuss the paradigm shift from demonstrating competency to continuing competency	Non-research	No sample	Patient safety is widely discussed in hospitals and among nurses; how long does demonstrated competency last? How often should performance be monitored to ensure competency; change paradigm to continuing competency	Examining competency in nursing is challenging; continued competence should be the focus as it gives way to focus on collaboration and interprofessional teams; continued competence is needed for those entering the practice of nursing as well as established clinicians	Non-research; does not discuss specialty areas of nursing and continued competency	Patient safety depends on continued competence; no discussion of assessment methods.	E
Khan, K., & Ramachandran, S. (2012)	Distinguish between competence and competency	Dreyfus model of skills acquisition; Miller's	No sample; review and critique of literature	Individual performance is based on skills, attitudes and the clinical practice	Competency is a skill and competence is an attribute; competence is	Broad discussion of assessment; nothing	Performance is impacted by many factors, actual and	E

	; to explain the relationship of competence and performance as it relates to the Dreyfus model of skills acquisition	pyramid related to assessment of performance		setting; performance changes as the clinical scenario changes	part of improving performance; performance rating scales should be used to assess performance	specific to any specialty area of nursing; broad review and critique	observed performance are classifications	
Kramer, M., Schmalenberg, C., & Maguire, P. (2010).	To identify organizational structures and best leadership practices essential to a healthy work environment	Meta-analyses of 2 sets of publication; first set was 12 publications from 7 professional and regulatory bodies that advocated for healthy work environments; second set was 18 publications from the	The 18 publications from the Essentials of Magnetism aggregated results from 1300 interviews with staff nurse, manager and physician experts and compared them to agency results.	9 most influential structures essential to quality work environment were identified; 95% of the best leadership practices; 9 “environment improving” organizational structures were identified; there were 9 items identified as most influential in enabling the nurses to do	Agreement between agencies and experts about those leadership practices essential to healthy work environments	Studies included in the meta-analysis might not be equal; agencies aren’t weighted the same; agencies and alliances are weighted the same as a single source agency; these	Important to understand the factors in a work environment that influence patient and nurse outcomes, relationships and processes; limited research evaluating interventions to improve work environments , nurse	A

		Essentials of Magnetism structure-identification studies.		those things essential to high quality patient care		factors were not considered	leaders can impact the work environment by adopting the essential structures and best leadership practices.	
Lipman, S., Carvalho, B., Cohen, S., Druzin, M., & Daniels, K. (2013)	To determine the reason for transport related delays during simulated emergency cesarean section	Prospective observational study; stopwatch to record specific milestones to determine total time from recognition of the emergency to the time of surgical incision; observed 14 simulated uterine rupture drills	14 teams of 2 OBs, 3-5 nurses and 1 anesthesiologist from Lucille Packard Children's Hospital in Stanford, CA	Teams required 9:27 minutes from start of emergency scenario to incision; primary limitations were defined as difficulty with the mannequin's "skin". Demonstrates that even in a fully staffed, high volume high functioning unit, there will still be 10 mins unit incision.	Emergency cesarean delivery is a challenge even when staff readily available; the transport of patient to OR took less than 1 minute; majority of time of drill was spent in OR before incision.	Simulation was controlled, not accounting for normal artifact that is present in any L/D unit: family, mannequin only weighed 80 pounds, great team work and high risk experience already existed; staff participatin	Simulation scenario for uterine rupture; 9 minutes from decision to incision; team immediately available; process for emergency deliveries appears to be hardwired	C

						g in drill were immediately available; drills were conducted at times convenient for staff; time estimates in this study probably underestimate the normal delays in an actual emergency delivery		
Lyndon, A., Lagrew, D., Shields, L., Main, E., & Cape, V. (2015)	Toolkit to improve health care response to obstetric hemorrhage; from the California Maternal Quality of Care	Non-research; toolkit	No sample; toolkit to provide guidance on risk factor, diagnosis, clinical management, education and	Multiple resources to diagnose, manage, screen and treat hemorrhage; algorithms and sample hemorrhage guidelines	Evidence based guidelines to direct the clinical management and treatment of maternal hemorrhage	No limitations notes; generalizable guidelines; evidence based	Hemorrhage guideline algorithm, management of 3 <sup>rd</sup> stage of labor, education for providers	D

	Collaborative		resources necessary to manage hemorrhage					
Lyndon, A., Kennedy, H. (2010)	Uses organizational accident theory, high reliability theory and symbolic interactionism to describe the nurse role in maintaining safety during labor and suggests actions for supporting the perinatal nurse at all levels to achieve maximum safety in perinatal care	Integrative review	Contributing to existing body of work; no sample	Perinatal nurse plays essential role in maintaining patient safety; error trapping	Inpatient birth units are vulnerable; adverse outcomes for mom and baby are possible if processes aren't upheld; organizational culture important factor in promotion of patient safety; complex systems can inhibit effective safety by nurse	None noted; generalizable paper although this was specific to perinatal setting	Descriptions of theories; high reliability most notable	C
Lyndon, A., Johnson, C., Bingham, D., Napolitano, P.,	Transforming communication and	Collaborative review of research	No sample, contributes to existing body of	Review suggests 50% maternal morbidity and	Research clear regarding attribution of teamwork,	Generalizable even though review of	Examples of what can leaders do, women and	C

Joseph, G., Maxfield, D., & O'Keeffe, D. (2015)	safety culture in intrapartum care		literature; review of collaborati ve research aimed at promotion of safety in intrapartum care	mortality is preventable; communication is about speaking up when defect noticed; teamwork and accountability	communication, leadership to patient safety	literature in specialty setting	families, health care organizations to impact patient safety	
Maddox, B., Waller-Wise, R., & Weed, L. (2014).	To explore nurses' perceptions of the new competency assessment evaluation research question: What are the perceptions of perinatal nurses regarding their learning using a multidimens ional approach compared to a traditional skills	Focus group interviews	68 perinatal nurses working at the medical center; participants n=13	Three themes emerged: I am learning; multidimension al learning together; increasing professional confidence	Nurse perceptions of competency assessments aides in improving assessment process; competency assessment should be meaningful and useful, relevant, comprehensive; continuous evaluation of program is essential	Small number of focus group participants ; findings relevant to understandi ng RN perceptions of competenc y assessment and used to guide assessment programs; multiple methods of assessing competenc y were distracting	Little guidance on how to implement training; staff invited to participate; staff to complete informed consent; focus group design; researcher led interviews to gain insight into RN perceptions of new competency model; RN input aided in an	B



	checklist and test based assessment?					too RN participants ; identified hands on competency as preferred method	understanding of competency assessment; input valuable for future education plans	
Mattson, S., & Smith, J. (2016)	Core curriculum for maternal newborn nursing	Text book	Contributing to existing knowledge and body of work	Curriculum for maternal newborn nursing	Evidence based curriculum; practice scenarios/tests and answers	None noted; can be used for newborn and maternal care	Used to develop pre/post tests in capstone project	D
Maxfield, D., Lyndon, A., Kennedy, H., O'Keeffe, D., & Zlatnik, M. (2013)	To investigate the occurrence of clinician concerns about safety and performance in labor and delivery units. 4 concerns were focuses of the study: dangerous	Multiple choice survey, sent via email. Survey addresses 4 behaviors: dangerous shortcuts, missing competency, disrespect and performance problems. Participants	Members in the following professional organizations (ACOG, ACNM, AWHONN, AMFM with an email address on file received a multiple	3,282 surveys collected; 92% of MD, 93% CNM and 98% RNs observed one or more of the 4 concerns in the last year; concerns were determined to be costly as 66% MD, 59% CNM and 77% RN said the behavioral concerns undermined	Participants in the study had concerns which were felt to be detrimental to patient safety and staff morale; however, they were often unwilling or unable to engage in dialogue with the person at the center of the concern	Convenience sample which does not give access to the entire population of professionals in the various organizations. Potential bias if participants who do not	Garnered support from the various professional organizations so that access to the email addresses could be gained and survey distributed; survey distributed by email used to determine if	B

	shortcuts; missing competencies; disrespect and performance problems	were asked to rate the behaviors based on how common, costly and discussable they were. The survey also asked participants to focus on instances when they did not address the target of the concern and give thought to the reasons for their silence. Multiple choice selections	choice survey	patient safety or caused harm; 9% MD, 13% CNM, 13% RN actually took the concerns to the appropriate person. Reasons for not speaking up were discussed.		feel as though problems with competence and communication exist in L/D did not respond. Survey delivery method made calculating the response rate difficult. Unable to determine if some hospitals were more represented than others	clinicians working with L/D teams experienced problems with performance, and in turn, addressed how those problems were communicated; communication is clearly an issue with in L/D teams; need to acquire skill to communicate effectively; this will make a difference in patient care, quality of care and staff morale; communication regarding safety in L/D	
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							is area of opportunity for future research	
McKeever, S., Twomey, B., Hawley, M., Lima, S., Kinney, S., & Newall, F. (2016)	To engage and empower and support the nursing workforce to participate in evidence based practice	Committee dedicated to developing and implementing evidence based clinical guidelines that support nursing practice across the Royal Children's Hospital in Melbourne, Australia	Committee with 4 leader team along with a nursing delegate from each of the 69 clinical department	All guidelines are developed by nurses, discussions occur at unit level to determine priority; guideline development process is followed to appraise the level of evidence being used to develop guideline; workshops to guide nurses through process of guideline development; translating evidence into practice is also a component of guideline development	The committee manages 70 guidelines; 16 new guidelines were published and 20 are in development which demonstrates the growing impact the committee has on engaging nurses in promoting evidence based practice	Implemented in a tertiary children's hospital, but applicability and generalizability are present	Committee aid the engagement of clinical nurses in implementing evidence based practice in the form of clinical guidelines	C

Melnyk, B., Gallagher- Ford, L., Thomas, B., Troseth, M., Wynngarden, K., & Szalacha, L. (2016)	To describe the EBP beliefs and level of EBP implementat o by CNEs; CNE perception of their hospitals' EBP organization al culture; CNE's top priorities; amount of budge invested in EPB; hospital performance metrics	Descriptive survey	276 CNEs across the US	Implementation of EBP in the practices of CNEs and their hospitals is relatively low; more than 1/3 of hospitals not meeting NDNQI performance metrics and almost 1/3 of hospitals are above national core measures benchmarks, such as falls or pressure ulcers (not good)	CNOs and CNEs value EBP but implementation is relatively low; more than ½ reported low level of EBP implementation in their own organizations; CNO and CNE stated highest priority was safety and quality, but EBP was not listed; little of the budget allocated to implementing or sustaining EBP; disconnect in executive leadership and understanding of impact of EBP in driving safety, quality and cost savings	Convenien ce sample and low response rate which decreases the generalizab ility of findings; self reported data by CNO and CNE; further research needed that gathers objective data over time and self reported data to measure the investment of EBP in evidence based care	CNO and CNE need education related to EBP and outcomes management in order to role model EBP; ROI on EBP is necessary so that hospital leaders understand outcomes are improved and cost savings demonstrated with EBP; need to build cultures supportive of EBP; support for furthering education of RNs and to embark on Magnet journey; EBP competencies should be	C
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							integrated into job descriptions for RNs; schools of nursing should prepare students to expect EBP competencies	
Mollon, D., Fields W., Gallo, A., Wagener, R., Soucy, J., Gustafson, B., & Kim, S. (2012)	To assess RN baseline and posteducation practices, attitudes and knowledge regarding evidence based practice	Descriptive pre/post survey	609 participants completed the survey; 327 presurvey and 282 postsurvey	No statistically significant changes were found in practice, attitudes, and knowledge/skills after the on line education; multivariate analysis, on line education was not a significant predictor of practice, attitudes or knowledge/skills regarding EBP; graduate degree, formal EBP classes and RN status were	Self learning on line modules may not always be the most effective method for expanding EBBP abilities and knowledge/skill of nurses	Study design, pre/post test were identical and difficult for staff to understand why they had to complete both; low overall response rate for both pre and post survey; the educational intervention was also	Clinicians have different knowledge levels and skills related to EBP; this an depend on education, level of interest and experience	C

				statistically significant positive predictors		a limitation, with no knowledge evaluation associated with the on line module, it was impossible to determine if the module was read and whether staff knowledge improved after reading; limited by the focus on the lack of knowledge; may need to focus on multiple barriers related to		
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						EBP, not just the educational deficit; population was from convenience sample, one hospital, results may not be generalizable		
Raftopoulos, V., Savva, N., & Papadopoulou, M., (2011)	To explore the factors that affect the safety attitude and team work climate of maternity units in Cyprus and midwives practicing there	Safety Attitudes Questionnaire-Labor version	106 midwives completed the questionnaire; median total of worked experience as midwife was 3 years; median total of nursing experience working in maternity	Experience midwives rated these domains higher: team work, safety climate, job satisfaction and working conditions as opposed to the midwives with longer working life in maternity rated these domains higher: safety climate, job satisfaction and working	High mean total score on team work and safety climate in the more experienced group of midwives is a predominant finding for the maternity units in Cyprus; facilities are small in size and midwives know each other, share accountability regarding	Survey conducted among midwives who work in the public sector; could include private sector to be a nationwide assessment of maternity care; private	Patient safety is priority in many healthcare systems; identifying preventable risks is life saving; need to focus on quality of care and evaluate the safety culture	C

			unit was 5 years		patient safety; younger midwives need more support and teamwork to enhance safety and teamwork climate to improve confidence	sector assessment would have likely yielded different results; lack of qualitative data; midwives work in all areas of maternity care and perceive a broad view of the quality of care; results of this study reflect the views and perceptions of those who chose to participate in the study and conclusions about the		
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						overall safety climate cannot be assumed from these findings alone		
Sammer, C., Lykens, K., Singh, K., Mains, D., & Lackan, N. (2010).	Literature review to organize properties of safety culture addressed in many studies; to develop a conceptual culture of safety model	Comprehensive review of literature; contributing to body of evidence; qualitative meta-analysis	Review of culture of safety literature in the US hospital setting; non-research; contributing to existing literature	7 subcultures of patient safety culture were identified: leadership, teamwork, evidence based, communication, learning, just and patient centered.	Safety culture is a complex concept and not clearly understood by hospital leaders; difficult to operationalize. Senior leadership accountability is key to an organization wide culture of safety.	None identified; looking at literature specific to US hospital setting; generalizable	Hospital leadership is pressured by federal, state, regulatory and consumer groups to demonstrate a culture of safety; this keeps patients safe and free from medical error; article helps to define “what is a patient safety culture?”	A
Sidani, S., Manojlovich, M., Doran, D., Fox, M.,	To explore nurses’ perception of evidence	Mixed method design; concurrent	56 nurse working in acute and	Quantitative results indicated favorable perceptions of	Findings highlight the importance of assessing nurse	Nurses indicated that if patients	Various barriers to implementing evidence	C

Covell, C., Kelly, H., Jeffs, L., & McAllister, M. (2016).	based intervention s which target patient oriented outcomes	application of quantitative and qualitative approaches; nurses in rehab care setting completed the Intervention Acceptability scale and responded to open ended questions. The scale presented information on the component of evidence based interventions targeting patient oriented outcomes; interventions were	rehab settings	most of the interventions; nurses rated some interventions as having limited appropriateness (acupuncture, guided imagery, massage and relaxation) and also reported low levels of implementing them in the clinical setting; qualitative themes confirmed reasons for nurse ratings	perception of evidence based interventions; this is a first step in promoting evidence based interventions in practice; those interventions of limited relevance are not likely to be accepted or implemented	have cognitive impairment or language barriers, implementing the interventions is a challenge; implementing the interventions could be time consuming; importance of staff education to enhance skills, collaboration with other professionals to implement some of the interventions is needed	based practice interventions exist; perceptions of these interventions are often overlooked but these perceptions do influence implementation of evidence based interventions	
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		rated on 5 attributes: relevance, applicability; frequency of use; likelihood and comfort implementing. The open ended questions asked about the appropriateness and resources needed to put interventions into practice						
Sini, S., Wallace, E., & Cross, W. (2014).	To assess how the workforce perceived the level of safety of their service, to explore	Open ended interviews, semi structured questionnaire	23 staff involved in the delivery of perinatal care (MD, midwives, nurses, nursing and	Unanimous reports of systems and processes in place to sustain quality and safety; 3 themes surfaced: clinical	Midwives and neonatal nurses play integral roles in forming team behaviors and attitudes which could affect the safety and quality of	Convenience sample; small sample size; difficult to generalize findings; Findings	System support for conducting study in low risk maternity hospital; staff interviews about the	C

	perceived interactions between professional groups and to identify issues that might undermine team performance, putting patient safety at risk		midwifery students, clerical staff); self selected cross sectional representation of perinatal staff	governance; dominance of midwives; interprofessional relationships; midwives had the greatest opportunity to influence (positively and negatively) the delivery of safe perinatal care	care; identified themes are consistent with nursing literature specific to team behaviors and the effect on patient safety.	relevant to those healthcare systems where midwifery is recognized as an independent profession	safety and quality of service; open ended; all interviews conducted by same interviewee; interviews lasted between 20-90 minutes, majority lasting 60 minutes. Interviews were recorded (audio). Themes included clinical governance, interprofessional relationships dominance of midwives	
Sprayberry, L. (2014).	To draw attention to the importance of direct	Non research	No sample; non research	As healthcare in America transforms, nursing is also targeted to	Nursing can help the nation in achieving goals of the ACA; nurses	Limited to nursing role in transformation	Review of literature related to transforming healthcare	C

	care nurse and emphasize the social necessity of this traditional role			change; fundamental needs of patients have not changed, neither have the needs of the bedside nurse; nurses must regain control of clinical practice and be assertive; if healthcare is to transform, it must start with the nurse	have strong political voice which much advocate for the entire profession	ion of healthcare	and involvement of the nurse	
Stichler, J. (2011).	To discuss the leader's role in change; review change theories, identify steps that will ensure successful change process, and to discuss how leading a	No instrument; review of change theories	No sample; non research	Change theories discussed: Lewin's Theory of Change; Lippitt's Theory of Change; Ajzen's Theory of Reasoned Action and Planned Behavior; Rogers' Diffusion Theory	Leading change is identified as a critical competency for nurse leaders; should be thoughtful, purposeful and planned; this leads to adoption and sustaining change	Leader's role in change; Magnet journey was highlighted as a major change where leadership is necessary to facilitate	Discussion of the theories and alignment with leadership	E

	transformational change, such as the Magnet journey, not only changes the organization, but also the leader							
Stokke, K., Olsen, N., Espehaug, B., & Nortvedt, M. (2014)	To explore evidence based practice beliefs and implementation among nurses in a university setting in Norway; to investigate whether there is a positive correlation between evidence based practice beliefs and implementation	Descriptive comparative study; Norwegian translation of the Evidence Based Practice Beliefs Scale and the EBP Implementation Scale. Demographic data was collected; also asked if the nurses had any prior knowledge of EBP	356 nurses working at the hospital between Sept 20-Dec 6, 2010. Nurses who were not always involved with direct patient care, such as charge nurses, professional development nurses	185 nurses participated; results showed nurses were positive toward EBP, but only practiced it to a small extent; positive correlation between beliefs toward EBP and implementation of EBP; statistical significant positive, moderate, correlation between the 4 subscales of EBP Beliefs Scale; highest	Study showed that nurses have a positive attitude toward EBP but not practiced as often; positive correlation between beliefs about EBP and implementation. Beliefs related to knowledge have greater effect on implementation. Having knowledge and being part of EBP work group is important	Low response rate (52%); may not be able to generalize findings; conducted at 1 hospital at a specific period of time; nurses are known for their competence and are leaders in the profession; results from	EBP beliefs scale, implementation; knowledge of EBP and work groups	C

				correlation observed for beliefs related to knowledge; those who had learned about EBP had significantly higher scores on the Beliefs scale than those who were unfamiliar with EBP; those involved in EBP work groups had significantly higher scores on the Belief Scale than participants not involved in EBP work groups		another Norwegian study could be different		
Tagney, J., & Haines, C. (2009).	Identifies key barriers to the use of research in the international literature	Non research; review of literature	No sample	Evidence is limited regarding effective strategies to transfer research based recommendations into clinical	Organizational culture is a major influence on the development and implementation ; leaders need to empower	Results could be generalizable in other countries and healthcare systems	Many approaches to implementing EBP are academic; barrier have been identified but	C

				care; known barriers; information technology is a critical piece to assessing and disseminating evidence to support practice	nurses; EBP should not feel academic, but integral to care and professional development		steps to address these in clinical practice are scarce; framework might provide leverage to enable further development of the concept of EBP and promote research for the benefit of patients	
Ven, J., Houterman, S., Steinweg, R., Scherpbier, A., Wijers, W., Mol, B., Oei, S., & the TOSTI-trial group. (2010).	To evaluate the cost effectiveness of multidisciplinary team training in a medical simulation center in the Netherlands ; to reduce the number of errors in	Multi-center randomized study with the center as the unit of analysis; OB department will be randomly assigned to receive multidiscipl	24 maternity centers will be randomized with a 1 year follow up	Primary outcome is the number of OB complications throughout the 1 <sup>st</sup> year after intervention; if team training appears to be effective, a cost effective analysis will be performed; this	Study protocol; study has not been conducted; avoidable deaths in hospitals because the team is not well trained; emergency training should incorporate the team as a team treats patients	Study protocol	Study has not been completed; no data specific to this protocol	E



	obstetric emergency situations	inary training or assigned to the control group with no training		is a study protocol	in the hospital; team training is important as it contributes to error prevention			
Wilkinson, C. (2013)	To examine the expectation of the RN along with the meaning of continuing competency also evaluates self reporting tools for recording continued competency (published in the last 10 years)	Integrative review of 4 self reporting continuing competency tools	1 <sup>st</sup> tool: 588 inpatient RNs in hospitals in 5 European countries, 2 <sup>nd</sup> tool: 1,431 public health nurses from Taiwan; 3 <sup>rd</sup> tool 815 Chinese RNs; 4 <sup>th</sup> tool: 258 Jordanian nursing graduates from 2001-2004	Understanding requirements of continuing competency is important in choosing self reporting tool; know the tool and how to use it; how to act on results; tool not all encompassing; goal is to further develop RN and support process of professional growth and education	The results of the review demonstrated improvement in the creation of and availability of self reporting tools; tools lack dimension and continued research in the area is needed	4 self reporting tools were reviewed; tools were not specific to specialty area of nursing practice; tools were general; continued research is needed	Competency assessments focusing on skills and knowledge do not provide holistic depiction of ability to practice clinically; important to understand concept of continuing competency and various types of assessment tools; continuing competency is essential to professional growth, safe delivery of	B

							care and patient experience. 1 <sup>st</sup> tool: 108 item questionnaire (4 point Likert scale) 8 dimensions; 2 <sup>nd</sup> tool: 38 item questionnaire (4 point Likert scale) 4 dimensions; 3 <sup>rd</sup> tool 58 item questionnaire (5 point Likert scale) 7 dimensions; 4 <sup>th</sup> tool: 27 item questionnaire (5 point Likert scale) 5 dimensions. 1 <sup>st</sup> tool strong	
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							content validity; no gold standard tool to measure RN competence in existence in Europe; 2 <sup>nd</sup> tool: strong content validity; tool most suitable for Taiwanese nurses/culture. 3 <sup>rd</sup> tool: strong content validity; sample not inclusive of various stakeholders; not representative of overall status of Chinese nurses. 4 <sup>th</sup> tool: nonprobability	
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							convenience sample, limits generalizability of findings	
Wong, P., & Myers, M. (2015).	To provide an educator's perspective on clinical competence and EBP	No instrument; non research	No sample	Knowledge, skill and clinical judgement all promote staff development and quality while supporting optimal patient care	Assessing knowledge, evaluating skills, simulation, case study and appraising clinical judgement are discussed	Non research; informative opinion from nurse educator; information consistent with evidence and could be used to support what is existing		E
Verklan, M., & Walden, M. (2015).	Core curriculum for neonatal intensive care nursing	Text book	Contributing to existing knowledge and body of work	Curriculum for neonatal intensive care nursing	Evidence based curriculum; practice scenarios/tests and answers	None noted; can be used for newborn and neonatal care	Used to develop pre/post tests in capstone project	D